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WATER AND SANITATION FOR HEALTH PROJECT

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SWAZILAND RURAL WATER BORNE DISEASE CONTROL PROJECT: A MID-TERM EVALUATION

WASH FIELD REPORT NO. 120

APRIL 1984

Prepared for:
USAID Mission to the Kingdom of Swaziland
Order of Technical Direction No. 168

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April 11, 1984

Dr. Robert Huesmann
Mission Director
USAID
Mbabane, Swaziland

Attention: Charles de Bose

Dear Dr. Huesmann:

On behalf of the WASH Project I am pleased to provide you with 10 copies of a report on Swaziland: Rural Water Borne Disease Control Project.

This is the final report by Jacques Faigenblum, A. Dennis Long and F. DeWolfe Miller and is based on their trip to Swaziland from October 30, 1983 to November 23, 1983.

This assistance is the result of a request by the Mission on October 6, 1983. The work was undertaken by the WASH Project on October 19, 1983 by means of Order of Technical Direction No. 168, authorized by the USAID Office of Health in Washington.

If you have any questions or comments regarding the findings or recommendations contained in this report we will be happy to discuss them.

Sincerely,

Dennis B. Warner

Dennis B. Warner
Director
WASH Project

cc. Mr. Victor W.R. Wehman, Jr.
S&T/H/WS

DBW:ybw

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A MID-TERM EVALUATION

Prepared for the USAID Mission to the Kingdom of Swaziland
Under Order of Technical Direction No. 168

Prepared by:

Jacques M. Faigenblum, Ph.D.
A. Dennis Long, S.D.
F. DeWolfe Miller, Ph.D.

April 1984

Water and Sanitation for Health Project
Contract No. AID/DSPE-C-0080, Project No. 931-1176
is sponsored by the Office of Health, Bureau for Science and Technology
U.S. Agency for International Development
Washington, DC 20523

TABLE OF CONTENTS

ABBREVIATIONS

AED.....Academy for Educational Development

BCU.....Bilharzia Control Unit

CDA.....Community Development Assistant

CHEO.....Chief Health Education Officer

CIDA.....Canadian International Development Agency

CTA.....Central Transport Authority

DEMS.....Department of Extra-Mural Services, University of Swaziland

DET.....Department of Establishments and Training

DSD.....Domestic Science Demonstrator

GOS.....Government of Swaziland

HA.....Health Assistant

HEU.....Health Education Unit, Ministry of Health

HI.....Health Inspector

IHS.....Institute of Health Sciences

KAP.....Knowledge, Attitudes and Practices

MOA.....Ministry of Agriculture and Cooperatives

MOH.....Ministry of Health

MOW.....Ministry of Works, Power and Communications

NSS.....National Survey of Schistosomiasis

ORT.....Oral Rehydration Therapy

PHE.....Public Health Engineer

PHU.....Public Health Unit, Ministry of Health

PID.....Project Identification Document

PP.....Project Paper

RHM.....Rural Health Motivator

RWBDCP.....Rural Water Borne Disease Control Project,
Ministry of Health

RWSB.....Rural Water Supply Board, Ministry of Works,
Power and Communications

SBS.....Swaziland Broadcasting Service

SHA.....Senior Health Assistant

SHI.....Senior Health Inspector

TA.....Technical Advisor

USAID.....United States Agency for International Development

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The authors greatly appreciate the help and support shown them by the following persons:

Mr. Craig Hafner, WASH Project, Washington, D.C.; Dr. Chuck DeBose, USAID, Swaziland; Ms. Linda Lankenau, USAID, Swaziland; Dr. Bill Hoadley and the other members of the AED team in Swaziland; Mr. Nicholas Dlamini, Ministry of Health; Mr. Lemma Menouta, Ministry of Health; Mrs. Lucretia Toth, and Mrs. Lois Jenkins, for their invaluable help in typing this report.

Last but not least, we extend out gratitude to the Government officials and field personnel we met for their assistance and interest in the activities of the Rural Water-Borne Disease Control Project and the Evaluation Team.

EXECUTIVE SUMMARY

The Swaziland Rural Water-Borne Disease Control Project (RWBDCP) (No. 645-0087) began in November 1980 and is due to conclude in February 1986. Its purpose is to expand the capacity of the Government of Swaziland, and the Ministry of Health in particular, to deliver effective preventive health services in order to reduce the prevalence of diseases related to water and poor sanitation. The project has five major components: 1) social science surveys to establish a basis for the design of the health education component specifically tailored to suit the cultural and social traditions of Swaziland; 2) health education instruction at the community worker level related to the promotion of healthful behaviors regarding water and sanitation; 3) epidemiological surveys to help establish priorities for health education, sanitation and other interventions, and to expand the technical capacity to detect water- and sanitation-related diseases; 4) support of the existing rural sanitation program through construction of low-cost, technologically appropriate facilities and training of community workers; 5) institutionalization of health criteria into the design of water-related projects and the establishment of an official public health engineering presence within the Government of Swaziland.

This mid-term evaluation was undertaken in November 1983 by a three-person team staffed by the Water and Sanitation for Health (WASH) Project and entailed three weeks of documentation review, interviews, observation of field activities resulting in an assessment of project progress to date, existing problems and future progress.

The principal project input is technical assistance (17 person years) from a social scientist, health educator, sanitarian, public health engineer, epidemiologist, and short-term consultants (mass-media, diarrheal surveillance). Other inputs include academic training in the U.S. of three people, a senior health educator, a public health engineer, and a graphic artist; construction of the first Health Education Unit, vehicles and materials for the health education and sanitation components; and housing for technical advisors.

Contractor performance by the Academy for Educational Development (AED) was found to be satisfactory given constraints not expected when the project was planned and contracted out. Home office support for the field was considered to be superior by the USAID Mission.

The public health engineering component has run into problems in trying to train a Swazi counterpart. Candidates returning with degrees are tempted away to the private sector by higher salaries. The Ministry of Health declined to establish the public health engineering position, but the position was established in the Rural Water Supply Board within the Ministry of Works, Power and Communications. The AED technical advisor for this component has been defining the role of the public health engineer and has been creating demand for those professional services. There had never been

a public health engineering position in Government service prior to the project. Public health engineering output has included health impact evaluations for a major dam project and for irrigation and water supply projects. Water quality guidelines and water-system design criteria have been drafted and an attempt made to get them legislated.

The epidemiological component outputs include the expansion and upgrading of the Bilharzia Control Unit (BCU) laboratory facilities. In-service training has also improved the professional skills and capacities of the staff. A young, newly named director is being trained by the AED epidemiologist and groomed for leadership. The Unit has constraints due to supply problems, transportation difficulties, and lack of data analysis facilities. However, a national schistosomiasis survey has been completed leading to identification of the highly endemic areas and the areas of infection of the different schistosomal species. This first-of-its-type survey will be useful for planning the disease control strategy. In addition, with the increasing shift of emphasis of the project away from schistosomiasis to diarrheal diseases, a new program of longitudinal, small-scale diarrheal surveillance has recently been started. The results are eagerly awaited by the Ministry of Health.

The sanitation component outputs include the training of Health Assistants in vented pit-latrine construction. One thousand latrines have been completed since 1981, and annual construction starts have been tripled since the start of the project. Demand for concrete slabs has outpaced supply, and, rather than face delays in construction, the use of locally available materials, such as logs, are being promoted. Through the example of the practice of good management, the AED sanitarian has created the demand for the creation of a central office program manager to assist the Director of the Health Inspectorate, an example of unplanned institutional development. There is an emphasis in the project of training the field agents, the Health Assistants, in communications and community mobilization skills.

The health education component has faced the most constraints to program implementation and institutional development. Staff positions in the Health Education Unit have still not been established, and the AED health educator is in an advisory position rather than the directorship position planned for in the project paper. Due to resulting conflicts, the original technical advisor was withdrawn and there was an 8-month hiatus until the arrival of his replacement. In effect, this component has experienced a one to two year delay and it was difficult to really evaluate its progress and future potential. Through the input of a social scientist, several useful studies were completed on values, knowledge and practices in rural areas related to water, sanitation, personal hygiene and child care especially in relation to infant diarrhea prevention and treatment; factors affecting community organization and mobilization; and on the practices of traditional healers with respect to water- and sanitation-related diseases. The purpose of these studies was to collect information on which to base a culturally appropriate health education strategy. One successful health education

program has been the mass-media compaign tied to the objective of diarrheal disease control. Over thirty programs have been produced by an enthusiastic and highly productive interministerial and inter-agency group under the direction of a senior public health nurse. The programs have been aired over a year and preliminary evaluation indicates that the programs reach 65 percent of those rural homesteads with radios. Training of extension agents from several ministries is planned to make them aware of and involved in diarrheal disease control, sanitation, and the use of communications and community mobilization skills.

Key recommendations by program component are:

Public health engineering - review of all major water projects for health implications; push for legislation of water quality standards; delay decision to train counterpart until his interest in the position has been firmly established.

Epidemiology - extend the technical assistance for one year to ensure adequate preparation of the Unit Director for its management; send the BCU Director for management training; increase the interaction between the epidemiological component and the other project components; improve data analysis capabilities; complete national survey on other parasites; develop the diarrheal disease surveillance study and increase its representation of different sub-populations within the country.

Sanitation - evaluate the pit-latrine program; extend the program into peri-urban squatter areas; support the establishment of the needed management position in the Health Inspectorate.

Health education - establish the Health Education Unit staff positions; integrate the Rural Water Borne Disease Control Project activities fully with those of the unit; implement a longitudinal behavior change evaluation process rather than the two cross-sectional surveys stipulated by the contract; further evaluate the progress of the health education component in April 1984.

Despite constraints, the evaluation team concluded that the project has a good probability of leaving a long-term mark on the control of water-related diseases in Swaziland, in developing institutional capabilities in public health engineering, sanitation, epidemiology and health education, and in enabling the Government of Swaziland to reach stated national health goals.

CHAPTER 1

INTRODUCTION

This document presents the findings and recommendations resulting from the mid-term evaluation of the Swaziland Rural Water Borne Disease Control Project (RWBDCP) (USAID Project No. 645-0087).

The Swaziland RWBDCP provides five years of assistance by the United States Agency for International Development (USAID) to the Government of Swaziland (GOS) between November 24, 1980 and February 28, 1986. The project provides technical assistance in sanitation, public health engineering, epidemiology, health education and social sciences; participant and in-service training; construction and equipping of a health education center and schistosomiasis laboratory facilities; limited support for construction of latrines and production of health education materials.

The project is implemented for USAID through a contract with the Academy for Educational Development (AED) of Washington, D. C., a sub-contract with the American Public Health Association, and in cooperation with the Ministry of Health of the Kingdom of Swaziland. Project funds support five long-term AED technical advisers; short-term consultants; various training programs; the purchase of selected commodities; and management of the project by AED.

The evaluation was carried out by a team of three short-term outside consultants. The evaluation was conducted between October 31 - November 18, 1983, 30 months after the effective commencement of the project in Swaziland. The contract (AID/AFR-0087-C-00-100S-00) was signed November 24, 1980 with an estimated completion date of November 30, 1985. The first technical advisor arrived in Swaziland in February, 1981 but all members of team did not arrive until November 1981. The project completion date, as a result, has been extended to February 28, 1986.

CHAPTER 2

BACKGROUND TO THE EVALUATION

2.1 Origins of the Swaziland Rural Water Borne Disease Control Project

The objectives and design of the RWBDCP were preceded by two Project Identification Document (PID) team visits, both strongly oriented toward a better understanding of the health impact of schistosomiasis in Swaziland and how the disease could be controlled. Both visits, first by Jobin and Jones, in 1976, and later by Bruce and Unrau, in 1978, resulted in reports which identified schistosomiasis haematobium and mansoni as major fecal-waste-based diseases infecting large numbers of rural Swazis throughout the Middle- and Low-veld areas. Although, epidemiologic data were needed, there was sufficient evidence that schistosomiasis prevalence was high and that the disease sapped the energy of the young and undermined the economic productivity of the adults. Drs. Jobin, Jones, Bruce and Unrau found that the measures necessary for schistosomiasis surveillance and control, available through the MOH, needed considerable strengthening.

The objectives and design of the project were changed in early 1979 as a result of the publication of the 1976 Census, in which it was established that sanitation and the access to safe water supplies were inadequate in rural Swaziland. In addition, it was thought that the control of diarrheal diseases, via water supply and sanitation, had the potential of contributing significantly to the reduction of the high infant mortality rate.

The six-person team charged with preparing the Project Paper (PP) visited Swaziland in June 1979. They were to develop an integrated project related to water supply and sanitation improvements. Some consideration was given to the project including the actual construction of water supplies. However, this aspect was deleted following discussions with the Canadian International Development Agency (CIDA) personnel at the Rural Water Supply Board. They were concerned about the overlap between CIDA and project objectives and any resulting competition for the limited number of qualified GOS personnel. It was agreed that there was a need for technical assistance in the area of public health engineering with respect to water supply and major water project design and that this would be an important area for the project to address.

A program to improve rural sanitation through latrine construction and use was relatively easy to identify as another necessary aspect of the project. The major component was seen to be health education if the people were to obtain the full potential benefits of water supply and sanitation improvements.

It was recognized that in addition to increasing safe water use and providing means for safe excreta disposal, the capacity of the GOS to continue these activities and programs would have to be developed through personnel training and institutional development.

2.2 Project Objectives

The RWBDCP is designed to address the problem of water related diseases by supporting Government of Swaziland (GOS) national programs that influence health practices at the homestead through the delivery of effective preventive health services. This project provides a focus within the Ministry of Health for the control of water-related diseases.

In order to support and expand the delivery of preventive health services, the following objectives were established:

1. to establish and implement a national plan for the provision of health education to achieve the adoption of behavioral changes with respect to water- and sanitation-related hygienic habits;

2. to demonstrate and implement the construction of low-cost, technologically appropriate sanitation facilities;

3. to develop and institutionalize the incorporation of health criteria into the design of water supply systems and other water resource development projects;

4. to support these previously stated objectives by carrying out a surveillance of knowledge, attitudes, and practices related to water, sanitation, personal hygiene, infant care, and water-related diseases as well as a nationwide surveillance of the prevalence of schistosomiasis and intestinal parasites. The results of these two activities were to be used in the design and content of the health education, sanitation, and public health engineering components;

5. that a major emphasis was to be placed on the development and organization of programs to be continued by the Government of Swaziland after withdrawal of the technical assistance.

2.3 External Factors

Two events occurred that were not envisaged when the project was formulated and that have had some impact on the orientation of the project:

1. The cholera epidemics of 1981 and 1982 shifted the emphasis of the project increasingly away from bilharzia control to the control of diarrheal diseases and helped to emphasize the importance of the project to health status in Swaziland.

2. The renewal of the contract of the WHO Health Education Adviser as director of the Health Education Unit (first until 1983 and then until 1985) contravened the assumption implicitly made in the Project Paper and project contract that the project's health education adviser would assume temporary directorship of the unit,

on arrival in Swaziland, until the return of the Chief Health Education Officer-designate from training in the United States.

This situation eventually led to difficulties in working relationships between the Health Educator/Chief-of-Party and the Ministry of Health resulting in the request for his withdrawal from the project after 18 months of residence in Swaziland. The eight months that it took to find and get a replacement to Swaziland caused considerable delays in the health education component. Furthermore, the reality of the position of the incumbent project Health Educator as adviser and not as acting director of the Health Education Unit has implications for the outputs that will result from the health education component.

CHAPTER 3

EVALUATION METHODOLOGY

3.1 Purpose of the Evaluation

The purpose of this mid-term evaluation of the RWBDCP is to examine its progress-to-date in achieving its objectives and outputs, to assess the appropriateness of the methodologies being employed by the contractor, to assess the adequacy of the project's schedule with relation to the achievement of stipulated End-of-Project Status (EOPS) conditions, and to make recommendations regarding work plan priorities, input extensions and contract amendments for the remaining life of the project.

3.2 Evaluation Scope of Work

In particular, the Scope-of-Work of the evaluation team called for the assessment of progress to date in achieving the following project objectives:

a. Health Education

(1) Establishment of baseline data on knowledge, attitudes and practices (KAP) of rural Swazis with regard to water, sanitation and personal hygiene and the resulting use of such data:

(a) in the design of the health education and communication components and

(b) as a basis for the measurement of project impact on water-use, sanitary and personal hygiene behaviors.

(2) Development of a health education strategy.

(3) Preparation of a national health education implementation plan that includes a system for health education content design, communications channels and methodologies, long-range training and staff requirements.

(4) Identification of factors affecting community mobilization for carrying out health- and other development-related projects. The formulation of strategies for mobilizing community action.

(5) Review of the potential for traditional healers to be a resource for stimulating community activities in health and for effecting changes in attitudes and health practices.

(6) The planning and implementation of a mass-media campaign coordinated with and in support of health education and sanitation activities.

(7) Establishment and filling of staff positions at the Health Education Unit and the provision of training for such staff as is necessary and appropriate.

(8) In-service training to community health and other extension workers in communication and community mobilization skills and health activities promotion.

b. Epidemiology

(1) Training of Bilharzia Unit staff in methodologies for identifying schistosomiasis and other intestinal parasites and the development of procedures to be followed in future surveys of schistosomiasis and other public health problems.

(2) National Survey of the prevalence of schistosomiasis and other intestinal parasites.

(3) Utilization of the schistosomiasis survey results for the establishment of priorities for the delivery of water supplies, sanitation and health education.

(4) Design and implementation of a diarrheal disease survey to assess the nature and magnitude of the diarrheal disease problem in Swaziland and to provide a basis for planning and assessment of preventive and control measures.

c. Public Health Engineering

(1) Establishment and filling of a position for a Public Health Engineer in the Ministry of Health and the training of the selected individual to the B.Sc level in public health engineering.

(2) Development of criteria for the design of water supply systems and selection criteria for determining communities to receive water supply and excreta disposal facilities.

(3) Review of all designs for dams, reservoirs, fish-ponds, water supplies, irrigation schemes and other major water resource projects planned during the life of the RWBDCP to make recommendations concerning the health implications of such designs and measures to minimize negative health impacts.

d. Sanitation

(1) Development of designs for pit latrines and establishment of criteria for the selection of homesteads to receive 2,000

demonstration latrines.

(2) Training of 42 Health Assistants in the siting and constructing of improved pit latrines.

(3) Establishment and training of 200 community sanitation committees.

(4) Strengthening the management and supervision of the Health Inspectorate.

3.3 Evaluation Procedures

An evaluation outline, including evaluation questions, the methods to be used to answer those questions and the Table of Contents of the evaluation report, was prepared at the WASH Project Office in Washington, D. C. prior to the consultants' departure from the United States. Team members were assigned specific areas within the Scope-of-Work according to their professional expertise. They were to describe and assess current progress in their specific area, identify relevant problems and constraints, assess future progress and develop preliminary recommendations for team discussions.

While in Swaziland, evaluation team members met in concert, or individually, with USAID, GOS and AED personnel, including briefing and evaluative interviewing sessions.

During the second week of the three-week mission, progress report meetings were held with USAID, AED and MOH personnel at which proposed recommendations were presented for comment and modification.

A thorough examination was made of project files at the USAID Mission, AED offices in Washington, D. C. and Swaziland, and the Ministry of Health. All project reports and project documents were reviewed. Visits were made to sites that were chosen to be representative of the spectrum of project field activities.

A joint briefing for USAID, AED and the MOH occurred on November 16, 1983, at which time the evaluation team was preparing the preliminary draft report. The mission officially ended on November 18, but the team's leader remained an additional two days to complete the draft report, which was delivered to USAID/Swaziland on November 22, 1983. A briefing session was held in Washington, D. C. on January 5, 1984 at which an informal presentation was made to USAID, AED and WASH personnel.

CHAPTER 4

PROJECT INPUTS

In this section project inputs, as called for in the Project Paper (PP) and as contracted for in agreements between USAID and the GOS and between USAID and AED, are listed. An evaluation as to whether those contractual obligations have been, or will be, met is also provided.

4.1 USAID Inputs

The PP lists USAID's inputs to the project. Some of these, USAID has maintained responsibility for, but operations and management of the project were contracted to AED. The epidemiological component was further subcontracted to the American Public Health Association (APHA).

4.1.1 Technical Assistance

The PP calls for 212 person-months of technical assistance. Table 4.1 shows a breakdown of the technical assistance by component and also indicates the duration of personnel contracts, approved extensions and the proportions of these contracts completed as of the time of this evaluation. While the PP and AED's contract calls for 212 person-months, currently AED has personnel contracted for a total of 197 person-months, therefore, without further extensions AED will be short by 15 person-months. Seven of these are for short-term consultancies. Therefore, eight additional person-months of long-term technical assistance are required. By component, this is further broken down as follows:

- Health Education - The initial health educator, Dr. W. F. Shaw, who was also the original Chief-of-Party, proved unsuitable for the project. His contract started on December 1, 1980 but was terminated on 29 May 1982. He was replaced by Dr. W. J. Hoff, whose contract runs from February 1, 1983 to January 31, 1985. This component therefore falls short of contractual obligations by six person-months.

- Social Sciences - The social scientist, Dr. E. C. Green, held an initial contract from March 7, 1981 to March 6, 1983, which was extended to October 20, 1983 at the request of GOS. This component exceeds the contract requirements by six months.

- Epidemiology - The epidemiologist, Dr. J. P. Chaine, held an initial contract from June 22, 1981 to June 21, 1984. This contract has been extended by two months.

Table 4.1: Technical Assistance,
in Person-Months

POSITION	NAME	PROJECT PAPER	AED CONTRACT	(REDUCTION)/ EXTENSION	EXTRA TIME AVAILABLE
Health Educator		48			
	Shaw		48	(30)	
	Hoff		24		6
Social Scientist	Green	24	24	6	(6)
Epidemiologist	Chaine	36	36	2	(2)
Public Health Engineer	Hoadley	60	48		12
Sanitarian	Lawrence	36	36	2	(2)
Statistician	-	4	-	-	4
Consultants	Various	4	1	-	3
TOTALS		212	217	(20)	15

- Public Health Engineering - The public health engineer, Dr. A. W. Hoadley, is contracted for four years, commencing October 1, 1983. Therefore, this component falls short of contractual obligations by 12 person-months.

- Sanitation - The sanitarian, Mr. W. P. Lawrence, held an initial contract from April 27, 1981 to April 26, 1984, which has been extended to June 21, 1984, and therefore, exceeds the contract by two person-months.

Short-term consultants fully supported by RWBDCP funds include:

Dr. R. W. Ryder - diarrheal disease surveillance (November 1982)
Dr. H. C. Gustafson - health education (August 1982)

Not all the short-term consultants who have contributed to the project have been supported by RWBDCP funds. These non-project supported consultants include:

Dr. D. Okun - manpower development strategy for the water and sanitation sector (July 1982)

Dr. H. Phillips - management consulting for the Health Inspectorate (October 1983)

E. de Fossard, M. Rubama, E. Booth, R. Greenberg, M. Rasmuson and A. Joof - AED media/communications specialists (October 1982; March 1983; July 1983; November 1983)

Therefore, to date, the project has consumed approximately one person-month of the available eight months of short-term consulting time.

The project has also hired an administrative assistant (part-time) and a secretary. The AED contract calls for the GOS to provide secretarial services. The administrative assistant position was not provided for. Both of these positions have been approved by USAID and are considered to be additional contract costs. These positions were not included in the previous analysis.

4.1.2 Academic Training

Seven person-years of academic training are called for in the PP. The contract only specifies the required level not the time needed. Table 4.2 provides a breakdown of the proposed training by position. USAID is responsible for the management of all training activities. The individual selected for training as director of the Health Education Unit (HEU) was unqualified for M.Sc. level training and is currently working towards a B.Sc. The public health engineer has not been sent for training yet.

Table 4.2 Academic Training Inputs

POSITION	TRAINING OBJECTIVE (Contract)	REQUIRED YEARS (Contr.)	TRAINING OBJECTIVE (Actual)	REQUIRED YEARS (Actual)	LOCATION	EXPECTED COMPLETION DATE
Director, HEU	M.S.P.H.	2	B.S.	2 ? 3 ?	U.S.	08/84 ? 08/85 ?
*Health Educator	Diploma	1	NA	NA	Nigeria	1982
Graphic Artist	Diploma	1	Diploma	1	U.S.	12/83
**Public Health Engineer	M.S.	2	M.S.	2	U.S.	12/85 ?
Total years		6		5/6		

*Training paid by WHO for 3 Nurse-Educators.

**Bachelor's Degree in Civil Engineering paid by CIDA.

Possible candidates for the public health engineering position have B.Sc. degrees. Therefore, if they are provided training it will be at the M.Sc. level as contracted and not at the B.Sc level as specified in the Project Paper.

4.1.3 Construction

All construction activities were the responsibility of USAID and contracted to the GOS. The PP calls for construction of the following:

- five houses, four in Mbabane, and one in Manzini
- Renovation of the laboratory for the schistosomiasis unit
- Construction of a central office for the Health Education Unit

While all facilities were constructed, existing documentation in USAID files is critical of the workmanship, the failure to satisfy design specifications, and the need for better USAID supervision. However, buildings have now been accepted as satisfactory, and are in use although several problems identified by the USAID inspection engineer were never resolved.

4.1.4 Commodities

Commodities called for in the PP include:

- o 5 vehicles for technical advisors
- o 4 motorcycles for senior health assistants
- o 5 overnight trailers
- o laboratory equipment and supplies
- o health education materials
- o construction materials for pit latrines

Of the vehicles, all were purchased except the five overnight trailers. Funds available for purchasing three of the overnight trailers were used to purchase a two and one-half ton truck. Laboratory equipment and supplies were purchased although additional equipment is now needed. Health education material and construction material for pit latrines, although called for in the PP, were not included in AED's contract. AED has requested additional funding to cover these and other costs.

4.1.5 Other Inputs

Other inputs provided for in the PP include:

- o KAP study
- o external evaluation
- o 10% physical contingency
- o local training costs
- o local production costs for health education materials

These items, while called for in the PP, did not appear as line items in the AED contract. External evaluation and contingency costs would be the responsibility of USAID, but all other costs should be reimbursed. Again, a request for these items is included in AED's June 1983 Budget Presentation.

4.2 GOS Inputs

The PP calls for GOS inputs as follows:

- o vehicle maintenance and operation
- o salaries and wages
- o in-country per diem
- o laboratory, office, and home furnishings
- o travel costs for academic training
- o health education materials and laboratory and other supplies
- o contingencies

USAID/Swaziland is in the process of developing a method for accurately accounting for GOS contributions to the project to-date. It was felt to be beyond the capacity of the evaluation team to assist with the development of such a methodology. The USAID Mission's position is that, based on its present monitoring system, the GOS has performed adequately on the delivery of inputs.

There have been problems with vehicle maintenance but this is a government-wide problem since all official vehicles must be serviced or repaired by one of the central Government garages; servicing by the private sector is not permitted; simple servicing can take several days and the quality of the work is variable. Change in the area of vehicle maintenance is beyond the control of the project's management.

4.3 Local Community Inputs

The PP calls for local community inputs of labor and local construction materials for the demonstration pit latrine program. First, the demonstration pit latrine program is no longer part of the project as the pit latrine program has been integrated into the MOH program. Second, while it is clear that there is significant construction of pit latrines on individual homesteads, it would be difficult to evaluate the value of this input.

4.4 Contractor Management and Budgetary Performance

In this section, the management and budgetary performance of the contractor, AED, and its subcontractor, APHA is reviewed.

4.4.1 Contractor Management Performance

Project management by AED takes place in two locations, Washington, D.C. and Mbabane, Swaziland. There is very close telephone contact between these two offices with calls at least once a week. The AED personnel in Swaziland had nothing but praise for the support given them by their Washington, D.C. project director, Mr. A. Kulakow. Similar praise for his performance was voiced by the USAID Mission in Swaziland. AED Washington, D.C., has been prompt in meeting the needs for consultants and other services and Mr. Kulakow has visited the project many times

since its inception and is known by all the senior MOH officials as well as the USAID Mission personnel. This close monitoring of project progress by headquarters has resulted in minimal management problems despite the potential for such problems caused by unforseen events.

The original Chief-of-Party, who was also the Health Education Technical Advisor, arrived in Mbabane in February 1981. He was replaced as Chief-of-Party by Dr. Hoadley in December, 1981 and was recalled from the field at the end of May 1982. Dr. Hoadley has been the Chief-of-Party since that time and is credited with the development of close cooperation between the Technical Advisors and with integrating the RWBDCP into the MOH. Prior to his leadership, the TA's worked within their own project components without much of a feeling for how the whole project fitted together. He has worked hard at integrating the results of the activities of the different components and at coordinating their work. One understandable effect of this effort to weld a project with a common purpose out of components used to functioning independently was that project management was affecting the level of technical input from Dr. Hoadley himself. Recognizing the situation, he requested and eventually got permission to hire a part-time administrative assistant in addition to the full-time services of a secretary. With these resources for handling the management and administrative workload, Dr. Hoadley intends to direct the major part of his efforts to his technical assistance responsibilities. The other members of the AED team in Swaziland were appreciative of Dr. Hoadley's leadership of the project. The evaluation team noted that the members of the AED team had good working relations with their counterparts, with other GOS personnel, and with members of the USAID Mission. The evaluation team heard no significant complaints about the conduct or performance of the AED Technical Advisors.

The project has one subcontractor, the American Public Health Association (APHA) based in Washington, D.C., and responsible for the provision of technical assistance for the epidemiological component. APHA does not have any direct managerial responsibility of the project.

The contract specifies that the Chief-of-Party submit a quarterly progress report to USAID. The evaluation team verified that such quarterly reports had been submitted. As part of the final quarterly report, an annual workplan for the upcoming year was to be included. On arrival in Swaziland, the evaluation team was presented with a recently completed progress report summary which included workplans, by project component, for 1983 and 1984. The workplans were adequate in their level of detail and completion dates.

One area of concern was the documenting of project implementation changes and changes in targets. Such changes were found to be appropriate, due to changing conditions between the time that the contract was signed and the time the TA's started work. These changes are addressed in this report under the appropriate project output component. It was found, however, that no changes had been made in the contract to mirror changes in activities. In the future, it is recommended that any changes in implementation or targets should be very clearly addressed in specific, dated documents including the official response of the USAID Mission and that of the GOS.

4.4.2 Contractor Budgetary Performance

The USAID Regional Auditor, based in Nairobi, completed an internal audit of the project in September 1983. The evaluation team had access to the draft report of this audit and to the responses of the Mission to the draft report.

The audit reports that project implementation began with a $2,061,545 technical assistance contract between USAID and AED in November 1980. By November 1983 the contract had been amended and increased to the sum of $2,394,173 to cover the costs of items specified in the contract but not included in the original contract budget. The evaluation team did not find any disagreements between USAID and AED on budgetary matters, and there were no reported problems with the way that AED has financially managed the project. The available evidence is that the project has been well managed by the contractor, AED.

CHAPTER 5

PROJECT OUTPUTS

5.1 Public Health Engineering

The goals and purpose for the public health engineering component of the project as called for in the PP are:

- To expand the GOS's awareness of, and capacity to prevent, water-associated diseases, while at the same time developing its rural water resources
- To institutionalize the position of a public health engineer within the GOS.

At the time the PP was developed there was not, nor is there still, an established public health engineering position within GOS. A strong program in rural water supply existed in the form of the Rural Water Supply Board (RWSB) funded by the British and other donors and managed with Canadian technical expertise. Since the RWBDCP was located in the MOH, it was assumed that the public health engineering function would also be located within the MOH, probably within the Health Inspectorate. From within the MOH, the public health engineer (PHE) was to work with other ministries, notably the Water Resources Branch in the Ministry of Works, Power, and Communications (MOW) and Land Use Planning in the Ministry of Agriculture and Cooperatives (MOA), in the development of guidelines for major water resource development projects to avoid adverse effects on health. Several aspects of these initial conditions have changed, resulting in slight modifications in the direction of the public health engineering component.

The project public health engineer, Dr. A. W. Hoadley, arrived in the country in October 1981. A recently graduated engineer, trained at the Bachelor's level in Canada via the CIDA program, was selected and assigned to the RWSB in anticipation of establishment of the MOH post. The public health engineering counterpart position within the GOS was first established within MOH in March 1982. However, the grade scale for graduate engineers at MOH is substantially less than in the RWSB. The selected engineer was faced with taking an inferior position from that offered to his fellow graduates hired by the RWSB and quickly decided to opt for the private sector. It became clear that the MOH was not in full support of institutionalizing public health engineering functions within its agency. To have offered a competitive grade, grade 20, as opposed to 16 offered by the MOH would have created problems since the Senior Health Inspector is grade 18 and was being proposed as his supervisor. The Ministry further argued that there was no career ladder for an engineer. It was, therefore, decided by the RWSB to transfer the public health engineer position from the MOH to the RWSB. Currently there is support for that position within the RWSB and a new candidate was hired on a temporary basis in July 1983. However, the position has not been officially established as yet within the RWSB.

The remainder of this section describes the scope of work for the public health engineering component and evaluates AED's success in fulfilling it. The scope of work in the project documents include:

- o Reviewing all designs for dams, reservoirs, fish ponds, water supply systems, irrigation schemes and other major water works planned during the life of the project.

- o Preparing water quality guidelines, criteria for the design of water supply systems and selection criteria for use in determining target communities for water supply and sanitation systems.

- o Training the Swazi engineer counterpart to carry out the duties required of the public health engineer.

5.1.1 Review of All Major Water Works Designs

The requirement for the review of all major water resource development projects needs definition.

1. Reviewing all water resource projects would be an overwhelming task for one engineer. A "major" project should be defined by some clear criterion such as the amount of capital invested in it or the population it serves.

2. The RWSB specializes in the design , construction and maintenance of rural water supplies. Dams, reservoirs, fish-ponds, etc., will be built by other ministries or by private sector entities. If the PHE position is located within the RWSB and the position paid for by the MOW, care needs to be taken to see that the PHE is not limited to working on rural water supplies but also has the ability to work outside the RWSB. Talks with the RWSB indicate that they are aware of the broader role of the PHE and that they intend to encourage interaction with other entities.

One aspect of this review process not considered in the PP is the timing of the review. Most major water resource development projects are funded by either the private sector or through an international donor. To have an impact, the public health engineering review must take place at the feasibility stage. By the time actual designs are reviewed, development is probably already progressing making major changes difficult if not impossible. A solution might be to request, via legislation, a review of initial environmental impact statements and project feasibility studies.

To date the following has been accomplished:

1. Luphohlo-Ezulwini hydro-electric scheme impact evaluation has been initiated.

2. Plans for an evaluation of the Integrated Rural Water Supply and Sanitation Demonstration Project have been developed.

3. Planned evaluation of USAID guidelines for the review of irrigation schemes was cancelled following cancellation of involvement by USAID environmental officer.

4. Identification and analysis of high-risk peri-urban areas and involvement with the Cholera Task Force took place during the 1981-1982 cholera outbreak. Also included were recommendations for provision of potable water and control of pollution in those areas.

5. An evaluation of the Ntsintse Water Supply project was performed at the request of the Baphaluli Swaziland Red Cross project.

6. An inventory of all rural water facilities has been initiated as part of the public health engineers involvement with the RWSB. While not involving a review of designs, it is important to know the number and capacities of existing systems.

7. As part of the 1981-1982 cholera control program, the disinfection of water stored in the home using household bleach was promoted. Various commercially available products were evaluated and two were selected as being appropriate. Several members of the AED team were involved in the development of this campaign. One of the product manufacturers chosen even modified the product's label to include instructions for its use as a drinking-water disinfectant. While a useful expedient in an emergency (there is evidence that people who adopted the practice stopped it when the cholera epidemic faded) it obviously will not solve the long-term water potability needs of rural Swaziland.

In conclusion, work has been done on this task but there has been only limited review of the design outside of the review of RWSB rural water supply projects. An evaluation of existing projects, or projects already under construction, accomplishes little other than increasing awareness of public health issues. At this stage, the evaluation team would prefer to see Dr. Hoadley and his counterpart take a more active role at the planning stage of projects. Final success at meeting this project output can only be evaluated if there is a list of projects reviewed with proposed modifications where necessary since the review process assumes that modifications will be proposed. Finally, there is a need to integrate information generated by the epidemiology unit regarding the distribution of schistosomiasis into the design of water resource development projects.

5.1.2 Water Quality Guidelines and Design and Selection Criteria

The development of design criteria and standard designs for water supply systems and of selection criteria for use in determining target communities for rural water supply and sanitation systems and dissemination of these criteria are effective in minimizing the need for project review especially for small projects. Design criteria exist for example for distances between latrines and solid waste pits and boreholes disinfection methods, source selection and rain water use, etc. Selection criteria of target communities

are not appropriate as RWSB either assumes responsibility for supplies developed by other entities or they respond directly to requests from communities.

Draft water quality guidelines have also been prepared by Dr. Hoadley. To make professional evaluations, one needs to collect good data on water quality, and for a public health engineer laboratory for analyzing water quality is essential. The RWSB laboratory, currently run by Mr. W. Lawrence (CIDA), is well-run and will be become increasingly important to the counterpart engineer. It is important that he learn all relevant laboratory techniques so that he can manage this facility effectively after Mr. Lawrence's departure. Water quality guidelines form the basis upon which to evaluate and compare water quality tests, thus their importance. The guidelines proposed so far reflect the capabilities of the laboratory and current needs of the country, but as those guidelines will provide the mandate for future public health engineering, it is important that the guidelines anticipate future potential problems in both the urban and rural settings. WHO potable water quality criteria might be more useful.

A water and sanitation policy, including strategies for improvement of access to safe water, has been prepared and approved by the water and sanitation subsector committee. The public health engineer also contributed to the Fourth Five Year Plan (1983-1988) for the Health Inspectorate.

The regulations issue is an important one. The stipulated project output calls only for proposed guidelines, which is appropriate given that the project's involvement is advisory to the GOS. However, without regulations there is no mandate for future public health engineering. Appropriate water quality and other public health engineering regulations are being drafted for consideration by the GOS. These developments need to be emphasized and a concerted effort made to have them legislated by January 1985.

5.1.3 Training of a Public Health Engineer and Institutionalization of a Public Health Engineering Position

The PP originally called for providing B.Sc. level engineering training to a counterpart, followed by Master's level training, followed by on-the-job training. This was an unreasonable expectation given the proposed life of the project. Fortunately, the CIDA program was already involved in training Swazis for the B.Sc. in civil engineering. Therefore, it was possible to select a newly graduated engineer, provide on-the-job training, and then send him to the United States for an M.Sc. As stated in the opening to this section, the first candidate resigned due to problems of placing him within the MOH. A second candidate, Mr. S. Zwane, was nominated when he returned from Canada in June 1983. To date, while there is strong support for a public health engineer within RWSB, no official position has been established resulting in Mr. Zwane's not always receiving pay with resulting economic hardships and low morale. In addition, project managerial responsibilities have taken a disproportionate amount of Dr. Hoadley's time. The combination of these and other factors resulted in Mr. Zwane also considering moving to the private sector. At the mid-point of this evaluation, Mr. Zwane announced his resignation, but after further consideration retracted his decision.

The evaluation team recommends that a decision regarding M.Sc. level training for Mr. Zwane be delayed until he has had at least one year of on-the-job training and until he has proved himself sufficiently motivated and interested in public health engineering. Success depends a lot upon Dr. Hoadley's ability to work with Mr. Zwane and to motivate him. If the decision is made to send him on for M.Sc. level training, then it could be argued that Dr. Hoadley's contract should be extended until Mr. Zwane returns from his studies. This would also bring this component up to the five years of PHE TA involvement planned for in the PP. However, should Mr. Zwane decide to enter the private sector, or if it is decided not to send him on for further studies, extending Dr. Hoadley's contract would be unwarranted, and perhaps it should even be terminated early. The evaluation team feels that just because funds are available for training is not an a priori reason for spending them.

Dr. Hoadley has spent time with each of the public health engineering candidates. Working with the Senior Health Inspector, Mr. L. Mtetwa, and with Mr. Evans, Senior Engineer, RWSB, he has defined the duties and responsibilities of a public health engineer. Two workshops have been offered in conjunction with RWSB and a third is planned. The two held were the Membrane Filtration Workshop (January 1983) and the Micro-Technicians Workshop (May 1983). The planned workshop for Health Inspectors and Health Assistants is to address issues of spring protection. Finally, Dr. Hoadley and Mr. Napoleon Ntezinde, RWSB Design Engineer, together attended a conference on the Evaluation of Drinking Water and Sanitation Programs held at the Royal Tropical Institute in Amsterdam in June 1983.

In conclusion, it can be stated that:

1. There has been limited progress in the review of all major water resource projects, due in part to a focus on the word 'all' and no attempt to define the word 'major' in this context.

2. Water quality guidelines and design criteria have been drafted but require further development.

3. There has been little progress in the training aspect of this component.

4. The public health engineering component needs further integration with the health education component. There has been some integration of the public health engineering component with the sanitation component and increasing efforts are under way to integrate it with the epidemiological component.

5.1.4 Public Health Engineering Recommendations

- Define major water resource development projects and, via the evaluation and impact analyses required of donors for proposed projects, begin review of all major projects by February 1984.

- o Emphasize the development of water quality and public health engineering regulations and push for legislation to be in effect by January 1985.

- o Greater integration is recommended between the public health engineering, epidmiological, and health education components of the project.

- o Delay the decision about graduate level training until the present candidate, M. S. Zwane, has had at least one year of on-the-job training and has proven himself sufficiently qualified and motivated. The project should be prepared not to implement this training aspect of the project if the present candidate resigns or is not considered to be appropriate. If there is no suitable candidate for graduate training by June 1984, there should be no training.

- o Depending upon the progress of the public health engineer counter-part situation, delay any decision regarding extension or possible early completion of Dr. Hoadley's contract. If the training aspect proceeds successfully, then it may be justified to extend Dr. Hoadley's contract until Mr. Zwane's return. If not, possible early completion may be warranted.

- o Dr. Hoadley should be devoting less time to project administration by February 1984. The recent hiring of an administrative assistant should assist him with this objective.

- o USAID should consider development of a new rural water supply PID to investigate the possibility of funding for RWSB activities in case the RWSB loses its funding and is unable to continue with the construction of rural water supply systems.

5.2 Epidemiology

The goals and purpose of the epidemiology component of the project, as called for in the project documents, are:

a. Training of Bilharzia Unit staff in methodologies for identifying bilharzia (schistosomiasis) and other intestinal parasites and the development of procedures to be followed in future surveys of schistosomiasis and other public health problems.

b. National survey of the prevalance of schistosomiasis and other intestinal parasites.

c. Utilization of the schistosomiasis survey results for the establishment of priorities for the delivery of water supplies, sanitation and health education.

d. Design and implementation of a diarrheal disease survey to assess the nature and magnitude of the diarrheal disease problem in Swaziland and to provide a basis for planning and assessment of preventive and control measures.

5.2.1 Accomplishments to Date: Bilharzia Control Unit

The laboratory at the Bilharzia Control Unit has been physically expanded and re-equipped. The unit now provides walk-in diagnostic service for the identification of parasites, routine examinations for food handlers (Health Department, Manzini Town Council), training for other medical technologists, and routine schistosomiasis surveillance and control. A National Schistosomiasis Survey has been completed which identified the areas which are most severely infested. Control activities, through targeted treatment in highly endemic areas with improved anti-schistosomal drugs, are now well established by the unit. The techniques for the examination of urine and stools have been upgraded and the identification of intestinal parasites was also included in the national survey.

Vector snail collection and identification methods have been strengthened and a formal arrangement for verification has been established with the Snail Research Unit of Potchefstroom University, Republic of South Africa.

The results of the schistosomiasis survey have been prepared as a draft report. This report has been reviewed line by line and should be considered as a valuable product of the project to date. Its use is suitable for a number of MOH planning purposes, water resources evaluation, public health engineer guidelines and standards formulation, health education, and sanitation program planning. A detailed technical evaluation of this report can be found in Appendix C.

In-service technical training has been particularly good, as the above accomplishments reflect the efforts of the BCU team working with the Technical Advisor, Dr. Chaine, rather than as a result of isolated efforts by Dr. Chaine.

5.2.2 Bilhariza Control Unit State of Readiness

The following items are either lacking or are insufficiently supplied:

Equipment -

- o Membrane filters, chambers, and related equipment for the quantification of schistosome eggs in urine
- o Additional laboratory glassware and reagents
- o Low-cost data analysis equipment for use in the laboratory is lacking
- o Reproduction of field reports, referrals, treatment forms and other BCU documents is unnecessarily time-consuming and constrains the utilization of BCU output by MOH, RWBDCP, and the health care systems

- o Chemical test strips for haematuria and proteinuria
- o Additional glassware and reagents for stool processing and examination
- o Reference and other resource material for the laboratory

Chemotherapy -

- o Praziquantel, the drug of choice for schistosomiasis mansoni and mixed infection, is in short supply

Purchasing -

- o During the past two years, four local medical supply companies have folded because of outstanding payments on filled orders. All MOH units suffer from slow to non-existent ability to purchase essential materials for continued operation. This, of course, constrains and jeopardizes the optimal benefit of the Technical Advisor. Logistical and distribution problems also reduce the effectiveness of the control efforts.

Transportation -

- o The BCU is a field dependent team which makes frequent visits to rural sites for specimen collection, treatment, snail collection, snail control, etc. The BCU vehicles are in constant use. The inability of CTA to keep BCU vehicles operating results in severe delays which undermines team morale, obstructs BCU productivity and more importantly wastes the investment made in technical assistance.

Data Analysis -

- o There are severe limitations on the capacity to manage and analyze the data generated by the unit. Both national survey data and routine surveillance data have formed relatively large data bases requiring programming assistance that, to date, has been obtained either informally or in the U.S. at considerable expense during the technical advisor's home leave. Preliminary data analyses, suitable for unit review and direction, are possible using new low-cost battery driven microprocessors. Providing this equipment would give the unit the long-term capability to generate results needed for monthly reports, etc. after the project has terminated.

5.2.3 Staff Training and Personnel: B.C.U.

Ms. B. Nxumalo was trained as a Health Inspector at the Institute of Health Sciences and joined the BCU upon graduation in January 1983, as director of seven Health Assistants and one Senior Health Assistant. Ms. Nxumalo had no previous experience in public or environmental health. She was made the Director because of the Senior Health Inspector's reluctance to place women Health Inspectors in the field. Ms. Nxumalo is the youngest member of the

BCU team. There are two female Health Assistants who have been trained to identify helminthic and protozoan parasites in the stool and urine, and they are responsible for examining the specimens obtained from field visits. The male Health Assistants have been trained to collect and process urine specimens and stool specimens from rural schools, agricultural estates, and homesteads. They are now capable of examining the urine specimens in the field. The male Health Assistants have also been trained to survey and collect vector snails, identify them and examine the snails for schistosome infection. Collectively, the unit is capable of routine surveillance of human schistosome infection using the rural primary and secondary school systems as a sampling base.

The BCU functions well now due to the positive working relations established between Dr. Chaine, Ms. Nxumalo, Mr. Ginindza (the Senior Health Assistant) and the other team members. The BCU is at a critical stage in becoming self-sufficient, and it would be unrealistic to remove Dr. Chaine's in 1984 and expect the BCU to continue its present quality of surveillance and diagnostic services. The BCU's director needs continued leadership and managerial training both at the informal level, with Dr. Chaine, as well as at the formal level, in a management training program. There are at least two management training programs available, the program at the Swaziland Institute of Management and Public Administration (SIMPA), and that at the Eastern and South African Management Institute, Arusha, Tanzania (ESAMI). It is recommended that the SIMPA course be given first consideration because of its location in Swaziland. Experience elsewhere has shown that for the training to be effective, management skills learned in the classroom need to be practiced as soon as possible in the every-day work situation. Training in Swaziland should cause the least disruption between training and work. Ms. Nxumalo should take the two week SIMPA Basic Management Functions course. The course curriculum includes basic management functions, human relations, basic concepts of organization, management information systems, communications and report writing, budgeting and financial management. After three months back at work to apply the material from the first course, Ms. Nxumalo should then take the two week SIMPA Middle Management Seminar. That curriculum includes planning, decision-making, problem-solving, time-management, leadership, delegation, personnel administration, conflict-resolution, and performance appraisal. If after taking these courses, Dr. Chaine feels that further management training is needed, consideration should then be given to other available courses such as at ESAMI in Tanzania. As Ms. Nxumalo's managerial and directing skills strengthen, Dr. Chaine will be able to gradually relinquish his direct leadership until the BCU can clearly function on its own.

Only one health assistant is a licensed vehicle operator. The van provided by MOH/CTA for field work was unfortunately involved in an accident this fall which destroyed the vehicle. The older van (1977) previously used by BCU has been returned to service. With only one team member able to drive, his absence means the team cannot leave the Unit.

5.2.4 Direction of the BCU

The BCU has always been staffed by personnel from the Health Inspectorate. With their specialized activities, the BCU personnel make up a "special" cadre of Health Assistants that do not share the tasks of the mainline Health Inspectorate personnel. Fundamentally, the BCU unit is a public health/epidemiology service which is located in the Public Health Laboratory in Manzini. Functionally, the management of this unit would be more appropriate if it were directed by public health/epidemiologically trained personnel, as is the case at present with Dr. Chaine, rather than by environmental health professionals.

It appears that the relationship between the BCU and the MOH is an undefined one. According to the official organization chart, the BCU Director reports to the Senior Health Inspector in Mbabane. The Senior Health Inspector reports to the Director of Medical Services at the MOH. The actuality appears to be that the BCU Director reports to no one, since the Senior Health Inspector, due to understaffing and the press of other responsibilities, has for all practical purposes relinquished supervisory control over the unit. This situation needs to change in light of the need for good management and the increased capacity of the BCU services. The recommendation is made that a direct line of authority be defined between the BCU Director and the Director of Medical Services.

Because of the lack of a clear line of authority, a question has been raised as to who should receive the monthly reports put out by the BCU. Routine reports from the unit have never been requested by either the Senior Health Inspector or the office of the Director of Medical Services. The evaluation team feels that the routine and special reports from the BCU should be seen by the Principal Secretary, the Director of Medical Services, the Senior Health Inspector, the Health Education Unit, the Planning and Statistics Unit, the RWBDCP, the Public Health Engineer at RWSB, and the Public Health Unit.

Planning and evaluation of BCU activities are other important applications of BCU reports. The unit is currently not self-sufficient in planning and evaluation of its activities and goals. Routine annual internal evaluation of the BCU needs to be established. An outline for this should be developed and the unit should complete this exercise quarterly before TA termination. The evaluation outline should include the development of the next period's objectives for surveillance, control and service.

5.2.5 American Public Health Association Advisory Panel

The reports prepared by the APHA Advisory Panel were primarily directed at the technical issues of schistosomiasis epidemiology. The advice provided has been useful and helped to improve the quality of the BCU's services, the National Survey for Schistosomiasis phase of the project received the most attention. Little assistance was provided with respect to improving

institutionalization of BCU's activities. Institutionalization through technical assistance, training activities, and laboratory expansion is highly desired by USAID and a major concern for the Technical Advisor, Dr. Chaine.

WHO consultant Dr. Barau, APHA consultant Dr. R. W. Ryder, and the Control of Childhood Communicable Diseases team (Center for Disease Control, Atlanta, Georgia) have all identified diarrheal diseases as an important cause of morbidity and mortality in Swaziland. As stated in the second APHA Advisory Panel report, "The USAID mission and the MOH have suggested that the project epidemiologist devote his full time to the diarrheal disease problem." (Draft Report of Second APHA Advisory Panel, Swaziland Rural Water-Borne Disease Control Project, March 9-10, 1983.) This reflects the current USAID/MOH interests and desired direction of the project. The MOH has specifically requested this activity from USAID (see Appendix D). Dr. Robert Ryder, APHA consultant to RWBDCP, reiterated the need to involve the project epidemiologist in a diarrheal disease surveillance study. Future APHA Advisory Panel activities need to be directed at (1) supporting the efforts of the project epidemiologist to establish the diarrheal disease study within the MOH as an on-going surveillance service, (2) planning how the results will be used by the various MOH units, and (3) appropriate and feasible advice on the technical aspects of this surveillance service. The evaluation team recommends that the Advisory Panel membership be modified to include people with an expertise in diarrheal disease surveillance.

5.2.6 Diarrhea Disease Surveillance

Status

Currently the available epidemiological data for diarrheal disease morbidity and related case fatality rates are compiled directly from monthly out-patient and in-patient reports recorded at the various health facilities in Swaziland. These data can be used for qualitative purposes but otherwise have very limited applications. Recording of births in Swaziland has not been required, therefore specific infant mortality data do not exist at this time. Estimates of crude infant mortality have been made, for example, by the 1976 census of the population, but rates such as the number of deaths in a year of children less-than-one-year-of-age over the number of live births in the same population, must be determined prospectively in time.

A good estimate of infant and early childhood mortality attributable to diarrheal disease has not been measured. Important risk factors for diarrheal disease morbidity and associated morbidity such as season, region of the country, breastfeeding practices, water consumption, household size, etc. have not been determined.

Mini-Surveillance

A protocol for mini-surveillance of diarrheal disease and infant and early childhood mortality for 180 homesteads in the Low-veld has been prepared (See Appendix E). Guidelines suggested by Dr. W. W. Ryder were used. The data form, or questionnaire, was designed with input from Medical Services, Health Planning and Statistics, Public Health Nursing, Public Health and

Epidemiology Unit, Rural Health Motivators and the RWBDCP. Each homestead which has at least one child under five will be visited once a week by a rural health motivator (RHM). After a census of the homestead is made, the RHM will complete the questionnaire by interviewing the mother. She will be asked about the number of days each child under five had diarrhea, its duration and related aspects, treatment used if any, feeding practices, births and deaths, water and sanitation use, and other questions about health care and education.

The mini-surveillance was started in October 1983. There are 18 RHM's involved, selected specifically because they are literate and have an outstanding record of past performance. Completed forms will be collected weekly, coded and keyed into the statistics unit computer. Only the first round of reports have been collected. Data analysis programs do not exist as yet.

Evaluation of Program

The study design is that of surveillance rather than survey. The measurement of infant and early childhood mortality rates requires systematic observations made over time. A weekly surveillance approach helps minimize recall bias, although problems of observer bias by the informant and the interviewer need addressing. The RHM examines each child under five years old during her visit and records the signs of diarrhea and dehydration if present. Examination helps ensure census validity.

The study is limited now to two separate areas in the southern Low-veld. Approximately 90 homesteads are covered in each area. Eighteen RHM's, working out of the Sithobela, Siphofaneni, Lubuli and Ndszevane clinics, visit ten homesteads each week for diarrhea surveillance in addition to 30 homesteads which have to be visited once a month for purposes of promoting better health. This means three homesteads must be visited each day—a heavy schedule given the scattered nature of the rural Swazi homesteads. It is expected that changes will be made in the study design and questionnaire as the study develops in the field.

The study design is adequate for piloting a surveillance system and for the goals and purposes of the RWBDCP. Changes in this design should be made only in response to preliminary findings which indicate specific modifications. Other changes, suggested by in-country users of the data, need to be given close attention and opportunities to incorporate these suggestions into the study design should be made. Changes suggested by outside reviewers, that are not consistent with the overall goals and purposes of the RWBDCP, may be difficult to use or to integrate into the project. Currently, a national survey (not surveillance) for diarrheal disease and infant mortality using a cluster sample design is beyond the scope and objectives of the RWBDCP.

Study Validity

The RHM's involved to date have agreed to do this study without extra pay or benefits. How long these workers will maintain their interest or how evenly they will apply themselves over time is unknown. Supervision is critical if

the user of the data is to be assured that the data was based on actual observations. Methods are suggested for assuring that the data assembled are valid.

- o Random visits should be made to homesteads by supervisors to corroborate the findings of previous visits and the data recorded.

- o An easily recognizable sign or symptom that is generally not correlated with diarrhea, such as superficial trauma, may be included on the data form. This item could then be corroborated by the supervisor during the spot check.

- o A method of recording daily episodes of diarrhea by the mother that could be checked by the RHM and the supervisor would help establish valid results and minimize the problems of recall bias. If, for example, the mother were to place a stone in a container, perhaps provided by the RHM, for each day that the child has three or more watery stools, the data collected could be more easily verified by comparing the results reported with existing conditions in the homestead.

- o When a homestead could not be visited or the mother could not be interviewed, the reasons should be recorded directly on the data form.

- o Methods for maintaining RHM interest in the weekly visits need to be developed. For example, feedback to the RHM about morbidity and mortality rates for their district, as they become available need to be given and discussed with the RHM. Homestead specific episodes of diarrhea should be maintained in the RHM notebooks and these figures should also be routinely reviewed and discussed with the supervisor and other district RHM's.

Data Analysis

As the first reports have just been received, no figures or analyses are currently available. The initial analysis should be formulated to identify problems of data collection, bias, validity, etc. in order that the necessary changes can be made before the program becomes too well established. It should be possible to calculate crude rates after a few more months of field work.

APHA Advisory Panel Input

The APHA Advisory Panel will increase its usefulness to the diarrheal disease program of the RWBDCP by formulating its assistance and recommendations within the context of the overall goals of the project, which are fundamentally those of institutional strengthening.

Institutionalization

Currently the project epidemiologist is implementing the surveillance study with the assistance of a senior Public Health Nurse, Ms. Elizabeth Mndzebele. She is in charge of the RHM program and orients and trains the RHM's in collecting the weekly data from the homestead. A formal counterpart for her has not been identified as yet. Furthermore, the unit to which this surveillance study should be assigned is not clear at this time. Discussions with the Director of Medical Services indicated that the Ministry would prefer to see institutionalization of diarrheal surveillance take place within the Public Health Unit rather than the BCU. The evaluation team only wishes to note the need for this study to be managed by an epidemiologist whether at the BCU or the Public Health Unit. At this time, Dr. Chaine is the best qualified person to manage this program for the MOH. It would make sense to keep the diarrheal surveillance program at the BCU only if the unit were to be permanently directed by an epidemiologist.

Study Development

Surveillance has just begun on a pilot basis in only a very limited area. Results from these areas should not be generalized. Furthermore, it will be at least three to four months before enough data have been collected before this pilot stage can be fully evaluated in terms of epidemiologic design, data from pre-testing, data coding, programming and assessment. Anticipated modifications of design and related changes will require additional time. It should not be anticipated that implementation of surveillance that will provide representative information from other rural districts and sufficient data to identify risk factors could be underway within six to nine months. Supervision and technical assistance will be critical during the growth phase of surveillance. The National Survey of Schistosomiasis is an example of this process and the time frames involved. It would be unrealistic to expect an in-place surveillance system for diarrheal diseases and mortality in less than 18 to 22 months.

The surveillance system once in place and routinely operating will be, by design, flexible in terms of coverage and updating. The quality and timeliness of data-analysis and the preparation of reports will depend on the accessibility of a computer. While simple data summarization might be done by hand or on a hand-held computer, detailed data-analysis is going to require the use of a computer. The evaluation team feels that the lack of computer access will be a significant constraint on the timeliness with which results can be presented to the MOH for its use in decision-making. For example, this system will provide an excellent opportunity for the epidemiologic surveillance and control of other highly infectious and virulant diseases. The mortality attributable to respiratory diseases in Swazi infants and young children is unknown and other important infectious diseases go unreported. Early warning of outbreaks is important in order to have the time necessary to mobilize control efforts.

5.2.7 Epidemiology Recommendations

Schistosomiasis

- Extend stay of Technical Advisor for one year to September 1985. This decision to be made by January 1984.
- The BCU Director, Ms. Nxumalo, should be sent in early 1984 to the Swaziland Institute of Management and Public Administration to take the Basic Management Functions and Middle Management courses.
- The BCU Director should report to the Director of Medical Services and not to the Senior Health Inspector.
- The MOH should consider naming an epidemiologist to the directorship of the BCU.
- A Programmer is needed to develop software necessary to manage and analyze future schistosomiasis control activities and diarrhea surveillance data on a Ministry of Health computer or a compatible local system.
- Surveillance for all the schools in the northern low-veld for both S. haematobium infection and S. mansoni infection, with appropriate treatment follow-up, should be completed by March 1984.
- A system should be developed of obtaining and transporting urine specimens for all types of surveillance in order that these specimens can be processed quantitatively for the number of eggs/10 ml of urine using the membrane filter technique.
- Survey the primary school in Engculwini community and compare results with homestead survey results by February 1984.
- Continue schistosomiasis surveillance in Swaziland using primary and secondary schools as a basis for sampling. Use these data to develop trends in the prevalence of infection.
- Tabulate and report on the additional 6,000 urine specimens examined during the national survey by March 1984.
- Monitor Luphohlo hydro-electric dam reservoir for vector snails and transmission.
- Bilharzia Control Unit (BCU) should continue to cooperate with the large irrigated sugar estates by providing consultation and case identification.

- The widespread application of molluscicides for snail control is not recommended. Focal control is recommended as outlined in the National Survey for Schistosomiasis (NSS) report.

- Provide funds for the purchase of metrifonate and praziquantel, reagent strips for detecting blood and protein in urine, additional membrane filter equipment, stool specimen processing equipment, laboratory glassware and reagents.

- Reagent strips for detecting blood in urine should be made available to all rural Primary Health Care Units.

- Develop a policy of treatment for schistosomiasis mansoni based on the availability of praziquantel and estimates of geometric mean S. mansoni egg counts/g stool.

- Praziquantel should be made available at all clinics and health facilities in the low-veld which are capable of detecting S. mansoni eggs in stool specimens.

- Limited follow-up study on the outcome of treatment with praziquantel in the northern low-veld.

- Metrifonate should be used for all S. haematobium infections, but not mixed or S. mansoni infections.

- Increase interaction between BCU, Public Health Engineering, and the Health Education components of the RWBDCP.

- Continue collaborative ties with the University of Swaziland.

- It is not recommended that the Epidemiologist participate in the evaluation of household bleach water disinfection project (see second APHA Advisory Panel Report).

- Health education for schistosomiasis control should be developed in collaboration with the team health educator as recommended in the Report of the National Survey of Schistosomiasis (NSS).

- It is recommended that the project purchase a photocopy machine, with a service contract, to be used by the Public Health Laboratories and B.C.U. for the reproduction of field reports, treatment forms, referrals, and other documents.

- Improvements in data management and analysis are badly needed. Both hardware and software computing is required. A HP41CV with appropriate attachments would be a low cost initial alternative in this direction. A small microcomputer with interface capability with the MOH computer is very desirable.

- Continue to provide reference and resource material for the BCU and support regional training programs and workshops related to schistosomiasis control.

- Complete report on the National Survey of other intestinal parasite infections by February 1984.

- Increase capacity of Bilharzia Control Unit to train laboratory technicians from government and private sector in parasitological diagnostic techniques.

Diarrheal Disease

- The APHA Advisory Panel membership should be modified to include persons with expertise in diarrheal disease surveillance.

- Develop the diarrheal surveillance study as an integral epidemiological component of the Public Health Unit or Public Health Laboratory.

- Develop an epidemiologist counterpart function within the MOH for the diarrheal surveillance study as no counterpart has been identified for this component as yet.

- Develop a plan of implementation for increasing representation of the study to additional rural areas to include the high-, middle- and low-velds and for identification of risk factors associated with diarrheal disease and related mortality by March 1984.

- Consideration should be given to adapting this surveillance system for the measurement of other water-related infectious diseases in addition to diarrheal diseases and mortality. This surveillance system could and should become the basis for the formal establishment of a center for epidemiology and disease control.

- Develop an approach for the analysis of data by January 1984. This will help anticipate programming and data management needs.

- During the pilot phase, data analysis needs will require a responsive system capable of providing preliminary tabulations necessary for planning and evaluation of the study design. Potentially, this can be provided by the MOH Statistics Unit. However, the data generated by field activities will soon surpass this capability. Hardware and software support should be planned for now. Programming assistance is urgently needed.

- For purposes of study design and to assure that sufficient data will be obtained for a) estimating rates, b) making comparisons between different rural districts, and c) the identification of diarrheal disease and mortality risk factors study size

(the number of homesteads that must be included for weekly surveillance) must be assessed by January 1984.

5.3 Sanitation

The goal and purpose of the sanitation component of the project, as stated in the project documents, is:

> To strengthen MOH's rural sanitation program through long-term strategy development, training, technical assistance and funding for a strong pit-latrine construction program.

The contract project outputs include:

- o Approximately 2,000 demonstration pit-latrines
- o Sanitation training of 42 Health Assistants
- o Formation of 200 community sanitation communities
- o Development of minimum design criteria for pit-latrines and alternative pit-latrine designs
- o Development of selection criteria for choosing homesteads for demonstration latrines

The Technical Advisor, Mr. W. P. Lawrence, arrived in Swaziland in May 1981. Mr. Lawrence was assigned to the Health Inspectorate Unit within MOH. This unit is under the direction of Mr. Leslie Mtetwa, Senior Health Inspector (SHI). The Health Inspectorate is responsible for rural sanitation programs and has a cadre working in rural areas which is able to participate in the project's sanitation efforts. The PP calls for all Technical Advisers to have Swazi counterparts. However, no training of a sanitarian counterpart was included in the project design. Therefore, Mr. Lawrence has not developed a trainee/counterpart relationship, but rather has acted as an assistant/advisor to Mr. Mtetwa.

To address the sanitation component it is important to understand the structure of the Health Inspectorate. When the PP was developed there were 45 Health Assistants (HA) and 6 Health Inspectors (HI) reporting to the SHI. Through attrition, there are currently 33 HA's, and 4 HI's reporting directly to the Senior Health Inspector. This reduction in staff has meant that the project can not meet its training objective. A study on strengthening the management of the public health inspectorate has just been completed by Dr. H. T. Phillips. It is strongly recommended that this report be given serious consideration and, where appropriate, action be taken on its recommendations.

5.3.1 Pit-Latrine Construction Program

By the end of the project the pit-latrine construction program should have:

- o Developed minimum design criteria and alternative designs
- o Developed site selection criteria for demonstration pit-latrines

- Constructed approximately 2,000 demonstration pit-latrines

The first and second requirements were necessary precursors to the demonstration pit-latrine program. The argument made in the PP for a demonstration pit-latrine program apparently assumed that there was not already in place a good latrine program and/or that latrines being constructed were poorly designed. In actuality, upon arrival, Mr. Lawrence did not find this to be the situation and he assessed the existing MOH sanitation program to be viable and decided to integrate the project efforts and funds into the existing Health Inspectorate program. The concept of a demonstration pit-latrine program was thus removed from the RWBDCP. This decision had two benefits:

1. There were no delays or problems in initiating the RWBDCP latrine program.

2. The long-term survivability of the program after completion of the RWBDCP was enhanced.

Table 5.3.1, taken from the AED draft 1983 progress report, lists the number of latrines constructed since 1979 by year. Since October 1981, the project has spent a total of E15,000 (U.S. $1.00 = E 1.15) for construction materials. The PP projected $61,000 (E70,000) for latrine construction. However, funding for this activity was not included in the contract. AED has requested this funding and, with the integration of the project latrine program into the MOH program, this funding request should be approved. If approved, this would mean a significant increase in the number of latrines constructed between now and the end of the project.

There are two concerns related to the existing pit-latrine construction program:

1. A high percentage of latrines remain in the 'under construction' category. That is, the pits may be dug and the slab provided, but the superstructure is not completed. People have several reasons for not finishing their latrines; there may be a labor-input seasonality factor, a shortage of superstructure materials, a landlord-lessee problem, or a concern that with community resettlement there will be a loss of investment in household improvements. While some of these problems may not be resolvable, increased knowledge about these barriers, increased motivation efforts by extension workers and follow-up visits by the HA's may help to decrease the number of unfinished units.

2. Vent pipes are optional and even if installed fly screening, which is always provided, may not be installed. Again HA follow-up may help.

TABLE 5.3.1 SUMMARY OF LATRINE CONSTRUCTION
Source: AED 1983 Draft Progress Report

Year	Latrines Completed	Latrines Under Const.	Source of Materials Min. of Health	Source of Materials RWBDC Project
1979	146	106	106	---
1980	289	105	105	---
1981	409	204	498+++	115
1982	520(est)	780(est)	320+++	876
1983 (6 months)	154+	565+	---++	---++

\+ 60% of field reports received

++ No materials purchased by either Ministry of Health or Project, April - July 1983

+++ While Ministry of Health contributions to latrine construction decreased from 1981 to 1982, spring protection projects increased from six to twenty-six. The budget for latrine construction and spring protection which had remained static at E11,000 per year, was increased to E26,000 in Fiscal Year 1983 and it is anticipated that MOH contributions to latrine construction will increase substantially during this year.

($1 = E1.15)

Currently, the demand for slabs is greater than can be produced by HA's. Accordingly, the Health Inspectorate has modified its policy to encourage individuals to use local materials when slabs are not available. While a concrete slab is easier to keep clean, latrines made with local materials are acceptable.

The Health Inspectorate, with encouragement and direct involvement of the TA, has also begun constructing latrines for clinics and schools lacking sanitation facilities. This effort is necessary and does offer the opportunity for community involvement and motivation.

The PP suggested construction of pit-latrines in the private sector. However, due to problems with delivery of concrete slabs and the widely dispersed demand for them in the rural areas, this is not currently feasible. However, an area of the country not currently provided for is the peri-urban area, where the population is increasing rapidly with corresponding increases in sanitation problems. The peri-urban areas have the advantage that its people exist in a cash economy, sufficient demand exists to make slab construction a potentially economically viable option and logistical problems of delivery do not exist. Accordingly, the development of a pilot private sector pit-latrine program aimed at the peri-urban areas and done in conjunction with the Town Councils and the Water and Sewerage Board is recommended.

Finally, there is concern that the pit-latrine construction program has no mechanism for evaluation. The development of a formalized evaluation procedure to be completed by the HA's is recommended. The concept is that HA's would return to the homestead one year after completion of the latrine to inspect the facility to ensure satisfactory construction, performance and utilization. These home visits would also offer a chance to focus on other sanitation issues such as solid waste and standing water (mosquito breeding sites) and to motivate the household to improve water and sanitation practices.

5.3.2 Training of Health Assistants

The PP calls for the training of 42 HA's in the siting and construction of pit-latrines and training in communication and community motivation skills related to sanitation practices. Currently there are only 29 HA's, directly reporting to the SHI, therefore the project's target of 42 trained HA's will not be met unless 13 new HA's enter service in the near future. The other constraint to the success of this activity is that it is dependent on close cooperation with the health educator TA and the Health Education Unit. Unfortunately there was an eight-month delay between the departure of the first health educator, Dr. Shaw, and the arrival of his replacement, Dr. Hoff (May 1982 - February 1983). Given that little was accomplished during Dr. Shaw's tenure and that Dr. Hoff is only just developing his work plan and contacts, Mr. Lawrence, who is not a specialist in training, has had to take on full responsibility for this activity.

To date, the following training activities have taken place:

a. A workshop for HA's and Community Development Officers and Assistants, held in June 1982, reviewed current latrine technology, formulated the local materials construction policy, and emphasized collaboration efforts among field workers.

b. On-the-job training of HA's has occurred via direct contact with HA's and through the Health Inspectorate management structure.

Anticipated training activities include:

a. Continued on-the-job training for HA's, SHA's and HI's.

b. District level workshops and training sessions for HA's, in conjunction with the Health Education Unit (HEU), to address communications and community organization issues, are planned for 1984.

c. Spring protection issues will be addressed in workshops on water supply planned for 1984.

It can be stated that the success of the HA sanitation training program depends, in large part, upon the success of the health education component of the project.

5.3.3 Community Participation

The PP calls for the formation of 200 community sanitation committees to work with HA's in the siting and construction of demonstration pit-latrines and to serve as community motivators and information resource persons for latrine construction beyond the demonstration phase of the project.

The social science survey on community mobilization and decision making indicated that it would be detrimental for the project to develop new committees when there were already existing groups to be utilized. Thus this project contract objective has been modified in practice to cooperation with and development of health committees, women's committees, community development committees and any other group that shows interest in working on water and sanitation related issues. A total of 45 committees were cooperating with the HA's in 1983.

5.3.4 Institutional Development

Institutional development is implicitly defined as a project objective through the concept of Technical Advisor. Mr. Lawrence has not had a trainee/counterpart relationship, but rather has acted as a deputy/advisor to Mr. L. Mtetwa, the Senior Health Inspector. Accordingly, he has actively participated in all issues related to the Health Inspectorate and has not

limited his attention to just sanitation issues. Mr. Lawrence's involvement has included:

a. Routine field visits with the SHI to district level personnel

b. Participation in monthly district Inspectorate meetings

c. Assistance in developing a new management information and reporting system within the Health Inspectorate

d. Providing assistance to the SHI in developing schedules for SHA's to ensure better utilization of resources, specifically vehicles, and better supervision of HA's.

e. Assistance in preparation of a scheme of service for the Health Inspectorate, September 1982.

f. Assistance in the development of a five-year water/sanitation policy statement (1983-1988)

g. Assistance in the preparation of a training plan for additional HA's that have been recently accepted for training by the GOS.

The September 1983 Phillips Report addresses issues related to strengthening the Health Inspectorate. An evaluation of management problems within the Health Inspectorate is both beyond the scope of this evaluation and would be redundant given the just completed study. The Phillips Report makes the observation that the unit is understaffed and it encourages efforts to train new HA's and HI's. It also supports the recommendation to create and fill a Deputy position to assist Mr. Mtetwa. To hire more HA's would involve the MOH in restarting the HA Training Program since there is no other source of trained HA's available in Swaziland. It is difficult to say what the effect of the decreased number of HA's has on the sanitation component output level. One would expect that a decrease of 25 percent in the available number of field personnel would significantly affect the output. However, considering the transportation, logistics, morale and managerial problems the Health Inspectorate is having, increasing the number of personnel without dealing with these problems would in all likelihood only exacerbate the situation and result in little to no change in output. The evaluation team is not therefore in favor of restarting HA training until the problems of the Health Inspectorate have been resolved by the MOH.

The Health Inspectorate is constrained by the lack of anyone within the organization qualified at the B.Sc. level or higher. Without sufficient academic qualifications it is difficult for employees within the Health Inspectorate to reach the same grade levels as employees in other units within the MOH, and therefore, the career status of this unit is limited. There are currently three new HI's and five more will join the Health Inspectorate next year. Accordingly, the evaluation team recommends that, after a minimum of one year of on-the-job training, the best of the HI's be

selected for in-country or regional B.Sc. level training. Subsequent to completing the B.Sc., this individual should return to the MOH to work as an understudy to Mr. Mtetwa.

5.3.5 Spring Protection Program

As part of their broad sanitation responsibilities, HI's and HA's are responsible for spring protection. Accordingly, a spring protection workshop is planned for 1984. Spring protection is also handled on a limited scale by the RWSB and Regional Development Areas but has been historically performed by the HA's. An anticipated product from the workshop is a manual on spring protection. Fortunately, several good publications already exist which the workshop should be able to call upon in developing its manual.

5.3.6 Sanitation Recommendations

- The recommendations of the Phillips report should be evaluated and, where appropriate, action taken on these recommendations, specifically, to support the establishment and filling of the Deputy Chief Health Inspector post. This individual should function as a foreman of the field Health Inspectors.

- The best of the new Health Inspectors should, after completing a minimum of one year of on-the-job training, be given the opportunity to complete a B.Sc. degree. Subsequent to completing this degree, preferably in-country, he should rejoin the Health Inspectorate to work under Mr. Mtetwa as an assistant and protege and eventually assume management responsibilities for the Health Inspectorate.

- New training of Health Assistants and Health Inspectors should not take place until the management, supervisory, salary and career-path issues have been successfully resolved.

- The "demonstration pit-latrine" and "sanitation committees" concept and objectives should be deleted from the contract by January 1984 as they are no longer appropriate to the project.

- As a follow-up to the pit-latrine construction activity and to provide a method of evaluating its success, one-year follow-up homestead visits by Health Assistants are recommended. During the homestead visits, the HA would evaluate the use of the latrine, ensure that it is clean and functioning properly and that fly screen is in place. He would also use this as an opportunity for motivating home sanitation practices and investigating other sanitation issues, for example, solid waste and the presence of standing water. The pit latrine evaluation protocol should be completed by January, 1984.

- The peri-urban area is potentially a public health crisis area. Currently, people living in these areas may not have access to potable water and, for the most part, do not have latrines. The

original Project Paper called for pit-latrine construction by the private sector. Due to delivery logistics in rural areas and other problems, this was not considered a viable option. However, for the peri-urban area, delivery logistics are not a problem. The number of households involved makes private sector involvement a potentially economically viable option. Accordingly, development of a pilot project, private sector, pit-latrine construction strategy, coordinated through the Town Councils' Health Inspectorates and the Water and Sewerage Board is recommended to be completed by March 1984.

5.4 Health Education

The purpose of the health education component is to establish and strengthen the capability of the GOS to design, implement, evaluate, and then redesign programs aimed at the adoption of health promoting behavior especially those affecting the incidence of water- and sanitation-related diseases and infections.

The Health Education Unit did not spring into being with the start of the RWBDCP. Health education activities started in 1963 with the formation of joint Health Education and Public Health Nursing activities. Initial funding was by Oxfam. By 1975, that joint unit was funded by the GOS and had forty (40) Public Health Nurses but no Health Educators per se. Three nurses had been seconded to health education activities, but they also participated heavily in nursing activities.

One nurse was sent off for training to receive a Master's Degree in Health Education, but upon her return was transferred to become head of the newly erected Institute of Health Sciences.

The HEU commenced as a separate unit in 1977 under the direction of the WHO Health Education Adviser, Mr. L. Menouta. It did not have official status within the GOS and the staff of two public health nurses and a visual aids assistant were still seconded from other units within the MOH. The unit had no official budget of its own and its expenses were being paid through the Public Health Unit in Mbabane. Thus the WHO Adviser, as Director, was responsible for the initial institutionalization of the unit and for the development of programs and activities concentrating on maternal and child health and family planning. This reflected the priorities of the MOH during the period 1976-1981 and the background of the Adviser in family planning education.

With funding from the RWBDCP a building was constructed for the Unit in 1981. When the Project paper was written, the WHO Adviser was due to terminate his consultancy in December 1980. Thus the PP assumed that the unit would be in need of an experienced director until a Swazi national could be trained for the position and stipulated that the RWBDCP Health Educator fill that position. In fact, the WHO Adviser's consultancy was renewed and is expected to be extended until at least December, 1985. This created an unfortunate situation on the arrival of the first project Health Educator in 1981. He had accepted the position on the understanding that he would be directing the unit, but to have that position meant that the WHO

Advisor would be expected to step aside after starting and directing the unit for four years. Not surprisingly, he desisted from so doing. What has really made the situation difficult and tense at times is that the contract was written as if the AED Technical Advisor would have complete control of the unit's resources and the complete ability to plan, implement, evaluate, and direct the strategy and objectives of the unit. In actuality, the AED Technical Advisor has never had that autonomy and has had to negotiate with the Acting Director for the use of resources.

The Acting Director sees water and sanitation related programs as only part of the overall duties of the unit. Criticism has been expressed by the staff that the RWBDCP is attempting to switch too much of the Unit's resources into the water-borne disease control component.

The responsibilities for the HEU that have been defined by the Acting Director include:

Family planning and maternal and child health
Immunization
Mental Health
Communicable disease control
Nutrition
School health
Rural water-borne disease control
Training of health and health-related personnel
Coordination of all GOS health education activities
Development and dissemination of educational materials

The WHO Advisor has the support of the Ministry and is well thought of by colleagues, staff, and clients.

The RWBDCP contract agreement calls for the GOS to establish seven professional positions in the HEU by 1983. Three of these positions have been semi-established, four remain unestablished. One of the semi-established position incumbents, a Nurse-Educator with a Diploma in Health Education from the University of Ibadan, Nigeria, was chosen to be the Chief Health Education Officer (CHEO) and was sent off for training to the United States in mid-1982. Upon her return, provided that she meets MOH standards, she will immediately be placed in the head position of the Unit. The WHO Advisor will at that time step into an advisory role until the end of his contract. At the present time, she is due to return in mid-1984. The USAID Mission still takes the position that since the contract calls for the AED Technical Advisor to direct the unit in the absence of the CHEO, that the GOS should request Mr. Menouta, the WHO Advisor, to step into an advisory position. The AED Health Educator, himself, has accepted his role as an advisory one and plans his activities in the light of this reality.

With this background, it is easy to understand the problems that have faced the implementation of the health education component of this project. The contract outputs and EOPS conditions have not been altered since the start of the contract despite the changed circumstances.

5.4.1 Social Science Outputs

The contract called for two years of technical assistance in the social sciences. This activity was to produce information on knowledge, attitudes and practices (KAP) related to water and sanitation. The findings of this activity were to be used to design the content of the health education program and the communications process to be used by the health education personnel and sanitation teams. As a result, the health education component of the project was to be specifically tailored to suit the cultural and social traditions of Swaziland.

In actuality, the contract of the Social Science Advisor was extended for six months, at the request of the Ministry of Health, which indicated the appreciation and value placed on this technical assistance by the Ministry. Although the contract did not call for the institutionalization of this input and no Swazi counterpart was required, it appears that such institutionalization might well take place, since the MOH has expressed interest in sending an MOH person to be trained as a social scientist.

The Social Sciences Advisor completed his work and left the project in September 1983. The work done by the Social Sciences Advisor includes:

a. an initial KAP study of water and sanitation in Swaziland
b. a study of community organization and mobilization
c. a study of attitudes, beliefs, values and behavior relating to diarrheal diseases
d. a survey and study of the role of traditional healers as health care providers
e. a survey of infant feeding practices in rural homesteads
f. a survey of emergency water tank usage in the Low-veld region
g. evaluation of school-health-team cholera education efforts in primary schools
h. evaluation of the health and social impacts of a new water system in a Hhohho District community
i. a survey of attitudes and practices regarding disinfection of household water with commercial bleach
j. evaluation of radio health programs

Outputs a. to e. were specified by the contract, outputs f. to i. were requested by the MOH to meet the immediate needs for information precipitated by the cholera outbreaks of 1981-1982. Output j. was linked to the activities of the Swaziland Campaign Against Diarrheal Disease and its production of health education radio programs. The evaluation team does not consider any of these non-contract-specified outputs to have been a misuse of project resources. Besides the information that was added as a result of these outputs, these activities enhanced the value of the total RWBDCP in the eyes of the MOH.

Sanitation KAP Surveys

The contract called for the design, implementation, and completion of the KAP study in the first year of the project. The KAP Survey was implemented

during the months of December, 1981 and January, 1982, eight months after the effective start of the project; the official report was published in October 1982.

The intended purpose of the study was to (1) provide baseline data for the design of a national health education strategy; (2) provide program design guidance for the health education and sanitation personnel; and, (3) provide baseline data for the evaluation of changes in water-use and sanitation-related hygiene behavior. The contract stipulates the design, implementation, and completion of a second KAP study in the fifth and final year of the project.

The first KAP study was to be based on a random sample of homesteads, stratified according to socio-economic characteristics, including educational level of the key members of the household. Information on the level of awareness as well as the prevalance of unhealthy practices was to be collected and used both for the setting of priorities for the sanitation, health education program and for the design of its contents and methodologies.

The major findings of the study were that, from a health standpoint, people who practice health-promoting habits are likely to live in the High-veld area, be members of larger homesteads, be female, younger in age, and have had several years of formal education or have such a person in the homestead. The Low-veld and Lubombo Plateau areas were identified as most needing water and sanitation education, especially the lesser-educated, and older men and women, and among those living in areas not visited by Rural Health Motivators or outside the Regional Development Areas. Education proved to be the most important factor associated with the level of health practices and knowledge. The strategic question raised by the KAP study was whether health education should be directed primarily at those most in need when at the same time this group may be most resistant to behavioral changes. Or should efforts be directed towards those who have already exhibited behavior changes and are presumably more receptive to adopting new habits? The health education program at present does not have a separate strategy or program for these two groups.

The survey showed that many rural people could not distinguish between "safe" and "unsafe" sources of drinking water. Many were unaware or unconvinced of the health benefits of improved water supply. Its value to them was measured in terms of convenience, not health.

With regards to schistosomiasis, this disease appeared to be less understood than cholera and was of less local concern. It appears that many rural people do not understand the contamination process or the need for all adults and children to use latrines.

The majority of mothers surveyed did not appear to recognize contaminated food and water as major causes of infant diarrhea. It was reported, however, that boiling water for use in preparing baby food was quite widespread, although the 94 per cent rate for informants who said they did in the survey was regarded as suspect. The idea of drinking a mixture of

medicinal powder and water is already familiar in traditional medicine and that could have a positive effect on the use of oral rehydration salts.

The KAP report stressed that to ignore traditional health beliefs or to challenge them would create stress, confusion, and resentment among traditional people, and that health education messages should be designed to accommodate certain traditional health beliefs without sacrificing public health objectives. The report states that excreta disposal is among the lower ranked concerns of rural Swazis, and that it in fact conflicts with traditional values such as female modesty, in-law respect or avoidance, and fear of sorcery associated with access to bodily wastes. During field visits, it was reported that some adoptees of latrines took care of the problems by building separate facilities. There was a lack of evidence in the health education pamphlets, posters, manuals and planning documents that traditional values or concerns have been addressed by the materials prepared so far, and it is recommended that much more effort be expended in relating public health objectives to the relevant concerns and values of rural Swazis.

The KAP Study as an Evaluation Tool

The contract calls for the implementation of two KAP studies, one at the beginning of the project, and another at the end. There are certain problems inherent in depending on the KAP study as a valid measure of behavior changes resulting from the implementation of the health education program.

a. Verity of Responses. The KAP study depends upon the respondent's reporting of behavior. To use this information as a measure of real behavior is highly questionable. Even in the first KAP study report, it is noted that for several items the responses are suspect. People all over the world are known to be prone to give interviewers the responses they think the interviewer wishes to hear and there is evidence that this occurred in the first KAP study.

b. Validity of Assumption. There is much controversy within the field of behavior modification about the relationship between stated attitudes and knowledge and actual behavior. The often invoked example in the health field is that of cigarette smoking. Even when people know and understand that it is dangerous they do not necessarily stop. The benefits to be gained by continuing the behavior may outweigh the costs of changing it. Knowledge per se does not necessarily lead to behavior change or mean that behavior change has occurred.

Evaluation of behavior change should be based as much as possible on direct observation of behaviors or of surrogate indicators. Obviously, there are some problems with this in practice: (1) the observer effect or people responding to the presence of the observer and (2) the timing effect or the observer never being there when some things are being done such as at night-time. For example, if there is cultural concern about being observed

using the latrine, waiting to observe latrine use may be an unrewarding task. Surrogate indicators of latrine use may have to be used such as cleanliness, presence of cleansing materials, lack of odor, a well-beaten path to the latrine, lack of observation of human stools in the bush, etc. Observations of food and water protection are a little easier to make without drawing attention to the fact. Washing hands before food preparation might be observed by the presence of the necessary items in the kitchen like a cleansing agent, clean water, or a drying agent. Purposeful timing of a visit may increase the likelihood of observing certain behavior such as the time of day when food is prepared when water is collected, or the time of day that children might play in a bilharzia-infested water course.

With ingenuity and careful consideration, it should be possible to develop methods for observing practices or surrogate indicators over the remaining life of the project. There is still time for this since there have been no major activities in the field with the health education program. If an evaluation protocol were completed by February 1984, one could finish the project with reasonable baseline and longitudinal data. If consistent observations were made by the Rural Health Motivators or the Health Assistants on quarterly or, even better, monthly visits to the same homesteads within one to two years there would be a data-base available for estimating the impact of the health education program. It is recommended that the Health Education Technical Advisor prepare a detailed evaluation protocol (forms, instructions, and a training plan) by February 1984. The services of a consultant might be merited to help with this task. There should be observations developed for every target behavior change. If a longitudinal behavior evaluation process is in place, together with an evaluation process for the radio programs impact, there is much less of a need for a second KAP study and it is recommended that it be dropped from the work plan, and the resources earmarked for it be used for developing the longitudinal evaluation methodology in its stead.

The Role of Traditional Healers as Health Care Providers

No mention is to be found of traditional healers in either the contract workplan, outputs, or EOPS conditions. However, the Project Paper states (p. 27) that it is important to investigate the role of the traditional healer in water-related disease treatment, especially infant diarrhea, and the healer's potential role in sanitation programs.

The study on the role of traditional healers as health care providers was done (August 1982 - January 1983) to provide information for MOH planning at the Ministry's request. The MOH was interested in exploring possibilities for the para-professional training of healers and for better integration of the modern and traditional health sectors. It was also interested in knowing the positive and negative aspects of traditional practices.

The study found that there are some 5,000 traditional healers in Swaziland, resulting in a healer population ratio of about 1:110. Traditional healers meet important community needs and earn relatively high fees. They

expressed interest in certain types of training in modern health care techniques and in increased cooperation with modern health sector personnel.

The study recommended that the healers should be trained in the use of oral rehydration salts on a pilot basis, to be followed by an evaluation of training effectiveness. It was suggested that the Health Education Unit have primary responsibility for coordinating all training and information-gathering activities relating to traditional healers.

The HEU staff conducted three workshops in 1983 for about 200 healers. The objectives for these workshops were to look at both traditional and modern treatment of diarrheal disease, to explain the use of oral rehydration salts, and to stress the importance of immunizations.

The healers in turn asked for a better attitude toward them and respect for their work by nurses and doctors. They asked for referrals to be made to them in exchange for their referrals of patients to the clinics or hospitals. They hope to form an official Traditional Healer's Association with a registry and regulations. Information was collected on traditional views on the causes and cures of infant diarrhea.

In all the workshops, the healers expressed puzzlement as to why the MOH was expressing interest in cooperation after so many years of disapproval. Obviously, a lot more work needs to be done to increase the trust on the part of the healers in the MOH and its interest in their input. The professional members of the MOH cadres need training in cross-cultural cooperation and tolerance. A follow-up evaluation of these workshops is planned for 1984.

These workshops were carried out by the HEU as a whole, including the AED Technical Adviser, and should not be attributed to the RWBDCP per se. The project stands to benefit significantly fron the future work planned with the traditional healers, including traditional birth attendants.

A male nurse qualified in midwifery has just been seconded to the HEU to work with Dr. Hoff on the RWBDCP. This is being done through the ORT project with AED but is separate from the RWBDCP and is located in the Public Health Unit. A newly graduated Health Inspector is expected to come on board soon to also work with Dr. Hoff.

The 1983-1984 workplan for the RWBDCP includes the development of recommendations for an expanded program to use traditional healers in diarrheal disease control. There is also a proposal for joint work by Dr. Hoff and one of the HEU Health Educators on improving the practices of traditional birth attendants and promoting better working relations among them, the MCH personnel in clinics and the Rural Health Motivators. Since the HEU has managed these activities, it would appear that this program has already been institutionalized. This effort is progressing well and providing valuable inputs for achieving the project's goals.

Community Organization and Mobilization Study

The purpose of this study, called for in the contract workplan, was to suggest a method whereby it would be possible to predict which types of communities would be most likely to organize viable and effective health committees, cooperate in community-wide ventures, and work well with community health and non-health workers. It also looked at the feasibility of forming the 200 sanitation committees specified in the contract. Further, it looked for indications of community mobilization. Lastly, it looked for indications of successful formation and maintenance of health-related committees.

From the study it was learned that the attitudes of local leadership towards development were very important to the success of community development efforts. Other important factors included the fate or fortune of other recent community development efforts and the general education and income levels of the community members, access by extension workers, access to roads, markets and water, and whether or not the community was a product of resettlement. Women's associations were found to have an unrealized potential for mobilizing communities around health and environmental sanitation issues. A surcharge on the normal clinic users fee was suggested for financing health-committee activities, and, lastly, the study recommended a simple procedure for assessing community mobilization potential.

The 1984 workplan in health education includes the training of community leaders and the preparation of guidelines on how to organize and use health committees. These outputs will be based on the findings of the community organization and mobilization study.

Other Social Science Outputs

1. Study of attitudes, beliefs, values, and behavior related to diarrheal diseases. This study found that traditional beliefs about infant diarrhea are very complex.

2. KAP study regarding disinfection of household water with commercial bleach. This was an evaluation survey done in areas where disinfection had been promoted during the cholera epidemic by nurses and Rural Health Motivators.

3. Evaluation of radio programs on diarrheal diseases. Designed with the Health Education Technical Adviser to determine if and when 200 homestead residents were listening to the programs and how favorable their responses were to the programs.

4. A survey of emergency water-tank usage in the Low-veld Region. This survey attempted to determine the social feasibility, not the economic feasibility, of placing drinking water tanks in high-risk cholera areas with scarce water-resources. The study showed that there were a few incidents of social problems over control of the water, but that in the main the program worked well on an emergency basis.

5. Evaluation of School Health Team cholera education efforts in primary schools. This survey tried to determine the effectiveness of "one-shot" cholera classes on hygienic behavior and knowledge in primary schools located in high-risk areas. The classes were delivered by nurses of the Public Health Unit's School Health Team. The evaluation showed that one lecture was not effective even in improving knowledge much less behavior. Because of transportation difficulties, 80 percent of the targeted schools could not be reached.

6. Evaluation of the health and social impacts of a new water supply system in Hhohho District. A public health engineering, epidemiological and social sciences team looked at the impacts of a new system promoted by the Red Cross of Swaziland. It was hoped that the study would help the development of new strategies to improve the use and maintenance of the system. No health effects were found but it was found that health education efforts had led to improved health awareness in the community and to increased latrine construction. This finding is of value to the RWBDCP since it appears to support the link between the introduction of water supply and the adoption of hygienic and sanitary behaviors and thus suggests a criterion for choosing communities in which to focus health education activities.

5.4.2 In-Service Training for Community Workers

Health Assistants (HA)

With respect to the training of HA's, the contract states that 42 HA's will be trained in communication skills and community motivation. It also states that 42 HA's will receive in-service training on an annual basis beginning in 1981. HA's were also to receive an initial two-week training, followed by one-week seminars for discussion of new methodologies and field problems.

The number of HA's is no longer valid, since there are only 29 HA's in service. At the time of the evaluation, no training of the HA's in communications skills and community motivations had as yet occurred. A training plan for a five-day workshop had been developed. The objectives of this workshop include teaching HA's how to communicate effectively with community leaders and groups; how to involve local people in planning, construction, use, and maintenance of water and sanitation projects. Two such workshops are scheduled to be completed by March 31, 1984.

In-service training for the HA's did occur in June 1982 under the auspices of the sanitation component of the RWBDCP. The workshop agenda included a review of current latrine technology, the use of local materials for latrine construction, and the development of working linkages between the HA's and other extension works with respect to latrine construction.

The health education training program for HA's is at least two years behind project schedule but with the start of workshops in 1984, the evaluator expects that HA training objectives will be reached.

Rural Health Motivators (RHM)

The contract states that 230 Rural Health Motivators are to receive in-service training annually beginning in 1981.

No training of RHM's has occurred to date. The 1984 health education workplan states that by July 1984, 25 per cent of the RHM's will have been trained in communication and health education skills related to water, sanitation, and other health programs. A system of follow-up supervision and in-service training will be established.

The Technical Advisor prepared a proposal to develop and test a training manual for RHM trainers and a field guide for the RHM's themselves. These manuals are to fill the need for written materials by the trainers and RHM's. The aims of these manuals are to improve the quality of training, supervision, and morale of the RHM's. The objective for the RHM Field Manual is that it will assist the RHM in providing basic health care and health education services for people in rural homesteads. Health education services include those for water-related diseases and sanitation.

The objective for the RHM Trainers' Manual is to assist trainers in teaching job-related skills. It can also be used to assist clinic nurses in their supervision of the RHM's and by the community leaders in providing guidance on how to support the activities of their RHM's. An English version of parts of the proposed RHM manual was available to the evaluator. The scope of content of this proposed 30-45 page manual was good. There are plans for field-testing the manual in the field with a sample of RHM's. This should remedy any of the shortcomings noted in the rough draft.

Domestic Science Demonstrators (DSD) and other extension workers

The contract calls for the in-service training of 40 DSD's on an annual basis beginning in 1981. No training of DSD's has taken place to date. The 1984 workplan for health education states that by July 1984, 50 per cent of the DSD's will have been trained in communication and health education skills. A system will be established to provide follow-up supervision and continued in-service training on an annual basis.

On the initiative of the Technical Advisor, an interministerial committee with representatives from the Ministries of Health, Education, and Welfare has been formed to identify the needs for educational methods and materials for training extension workers. The committee has almost completed a survey of the extension workers with which to determine their training needs. After analysis, the three ministries will develop coordinated plans to train extension workers in skills such as interpersonal communications, effective educational methods, and community mobilization. The Technical Advisor will be participating in the training. The involvement of the HA's, RHM's, DSD's, and other extension agents is expected to foster closer working relationships in the field and to inform non-health related workers about the content of the basic health education messages on water related diseases and sanitation.

School Teachers and School Health Nurses

This activity is not explicitly called for in the contract. At this time, it is in the form of a proposal made by the Technical Advisor for a pilot project to demonstrate the effectiveness of a comprehensive health education program in four to six primary schools. The proposed program includes providing a sanitary environment (latrines and a safe water supply) developing supplementary teaching materials on health training the teachers to use the materials to teach positive health behaviors to the students and integrating the health teaching with the visits of the School Health Nurse and the Health Inspectors. At the project review with MOH officials a thorough evaluation of the existing school health curriculum materials was recommended with the cooperation of the Ministry of Education. The implementation of the school health program will call for the use of funds not planned for by the RWBDCP. It is recommended that this proposal be given second priority until adequate progress has been demonstrated with the contractual requirements.

5.4.3 Development of a Mass-Media Campaign

Development and implementation of a mass-media campaign appear in the contract workplan, but not in the Expected Outcomes section which includes EOPS conditions and outputs. There is an internal USAID memorandum dated October 27, 1981, that recommended the removal of all references to a mass-media campaign. However, the contract document has never been officially amended in that fashion.

A one-week Communications Planning Workshop was held in October 1982. The workshop was followed by further training in radio program planning and message design. The workshop was jointly sponsored by the MOH and USAID and it brought together participants from the Ministries of Health, Agriculture and Cooperatives, and Education, the Swaziland Broadcasting Services, the Rural Water Supply Board, and non-governmental organizations such as private hospitals, the Red Cross, and the Family Life Association. Resource persons for the workshop were supplied by various ministries and the AED.

The purpose of the workshop was to improve development of communications planning in the participating ministries and agencies and to develop collaborative communications strategies for the Health Education Unit.

As a continuation of the Communications Planning Workshop in October 1982 an interministerial workshop was held in February 1983 at which time a well-conceived and carefully planned radio campaign was written with clearly specified purposes, objectives, and program content. The campaign, known as the Swaziland Campaign Against Diarrheal Disease, has produced a total of 33 radio programs to date - fourteen 15-minute programs and nineteen 1-3 minute spots. These programs were produced by the interministerial committee consisting of individuals from the Public Health Unit, the Swaziland Broadcasting Service, the MOW and the MOA, with the assistance of two AED

Broadcasting Service, the MOW and the MOA, with the assistance of two AED consultants. This committee is chaired by Mrs. Gladys Matsebula, Public Health Unit Coordinator of the MOH's Diarrheal Disease Campaign; the main technical support comes from Dr. Hoff, the RWBDCP Health Educator.

The programs and complementing short spots were broadcast beginning in May 1983, and were due to continue until January 1984. The messages were clustered and phased as follows:

May	General awareness campaign
June/July	Latrine construction campaign
August	Water Disinfection campaign
September	Review
October-December	Oral rehydration therapy campaign

Program phasing was based on the following considerations: the time of the year at which particular information would be most relevant, e.g., ORT for infant diarrhea during the rainy season; the time needed to prepare the programs, support materials and train extension workers for message reinforcement; and the need for further research in the areas of ORT and water disinfection.

The RWBDCP evaluation coincided with a consultancy on the radio campaign by Rasmuson and Joof, AED consultants from The Gambia. Rasmuson and Joof have been working on a successful radio campaign, strictly concentrating on ORT, for the past two years. They report that they were thoroughly impressed by both the process and the outputs of this committee-style production process. The members of the committee were obviously very committed to the campaign and very professional in their approach to program production. Their recommendations included promulgation of a written statement of policy on diarrheal disease management using ORT for the MOH (four different ORT formulas appear in the radio scripts); use of ORT radio programs only in January 1984 to establish the new ORT formula; ORT training for health staff; updated implementation plan for the Diarrheal Disease Campaign; coordination of the campaign should be done by the HEU; making more use of the data produced by the studies done by Dr. Green, the Social Scientist Technical Adviser; linking the radio campaign evaluation to the newly established RWBDCP diarrheal disease surveillance study; institutionalization of program monitoring and impact evaluation activities; and deletion of references to traditional healers that they might consider offensive given the HEU's recent attempts to develop cooperation between the traditional and modern health sectors.

In August 1983, Drs. Hoff and Green collaborated in a pilot evaluation of the impact of the radio campaign. Interviews with respondents, representing 200 homesteads, indicated that 65 per cent of those with radios were

listening to the series. The 1984 Health Education workplan states that a survey will be done of sample rural homesteads to identify listening patterns and elicit responses to the current programs; existing programs will be reviewed and revised if needed; train an Health Inspector and Nurse-Midwife will be trained as Health Education Assistants for work on the campaign.

The mass-media campaign is the most successful and productive activity in the health education component of the RWBDCP to date. To increase its institutionalization in the HEU, every effort should be made by the AED Technical Adviser to encourage the participation of the Unit's Health Educators. The campaign is going well and its planning and implementation processes are sound. RWBDCP objectives are fully expected to exceed EOPS conditions.

5.4.4 Health Education Component Goals for March 31, 1984

In light of the concern about the delays in implementing the health education component, a list was prepared of outputs to be delivered by March 31, 1984. They are as follows:

	OUTPUT	REQUIRED RESOURCES
1.	At least 60% of the rural population to be receiving relevant messages on water protection, sanitation and diarrheal prevention via the radio campaign	Existing Diarrheal Disease Control Campaign Committee
2.	Five new leaflets will be produced, pretested, and distributed to extension workers to complement the radio campaign. The leaflets will cover: breast feeding, ORT, latrine construction, personal hygiene, and water disinfection.	Continued assistance of the HEU Graphic Artist
3.	Evaluation of impacts of the traditional healer workshops with respect to the adoption of ORT	Cooperation of the Traditional Healer Committees; no difficulties expected
4.	Protocol of a learning module for SEBENTA (Adult Literacy Campaign) on ORT and diarrhea prevention	Assistance of the HEU Graphic Artist
5.	Completion of two work-shops for all Health Assistants	Assistance from the RWBDCP Sanitarian, Health Inspectors, and the two Health Education Assistants
6.	Finalized plan for the training of extension workers (RHM's, DSD's, CDO's, etc)	Assistance from interministerial committee on extension-worker training. Assistance from DEMS will be required
7.	Completion of a training/ procedures manual on ORT for clinic and hospital staff.	Finalized MOH policy on ORT. Funds available for printing
8.	First section of the two RHM manuals ready for pretesting	Project funds by January for employing writer/editor and illustrator

The evaluator recommends that Mrs. L. Lankenau, the USAID Assistant Health Development Officer, and a health educator by training, be assigned to monitor the progress of the health education component between December 1983 and April 1984. If major progress has not been made towards the achievement of these objectives by March 31, 1984, consideration should be given to early completion of the service contract of the RWBDCP Health Educator. Dr. Hoff most likely will achieve these outputs in the required period.

If major progress continues to be made in the health education component and the Chief Health Educator Officer designate returns to assume leadership of the HEU in mid-1985, it is recommended that the RWBDCP Health Educator's contract be extended until the end of the project or until February 1986, whichever comes sooner (a maximum extension of 12 months).

5.4.5 Development of Health Education Strategy

Soon after his arrival in Swaziland in 1983, at a meeting in the MOH, the AED Technical Adviser, Dr. Hoff, was requested to develop a health education strategy to complement the previously accepted five-year plan for Health Education submitted by the Unit's Acting Director, Mr. Menouta. Dr. Hoff submitted the Strategy to the MOH in May, 1983. The Strategy incorporated the results and recommendations of the KAP study, the existing Five-Year Plan, the Third National Development Plan, and other MOH planning documents; it also included inputs from key persons in the MOH and all the staff members of the HEU. There has been no official response to the document. This may be due to its being seen as an HEU internal document. Through interviews, it was possible to ascertain that the Strategy was seen as a useful and worthwhile input by the MOH.

The Strategy lists the following recommended health education priorities:

1. Strengthen the HEU
2. Promote community involvement and self-sufficiency.
3. Develop and use appropriate health education technology.
4. Improve the functioning of extension workers and develop a coordinated outreach system.
5. Develop an effective school health program.
6. Develop health education manpower.
7. Maximize the use of traditional health practitioners.
8. Coordinate health education activities at all levels of the GOS.
9. Use pilot demonstration projects in developing new health education methodologies.

The Strategy document is a fine initial document, but it needs further elaboration to make it an effective planning tool. It is recommended that the system for program content design and proposed methodologies be presented in greater depth and that the issue of long-range planning and personnel requirements be addressed and related intimately to the declared priorities.

An important issue for the strategy document is the long-range personnel needs of the HEU. A five-year health education plan for 1983-1988 was

developed in early 1983 under Mr. Menouta's supervision with input from the AED Social Scientist, Dr. Green (in the absence of a project health educator), and submitted to the MOH. This plan calls for the establishment of nine professional posts at the Unit by 1988. These posts are to be one Chief Health Education Officer, four District Health Educators, and four Assistant District Health Educators. This implies that the health educators would remain as generalists with the ability to support all HEU program activities. The present staff are not specialized and this makes sense given that there are so few. If one person is absent another person has to be able to completely assume their activities. The evaluation team suggests that the first stage of expansion for the HEU should include the permanent presence of a health educator in each of the districts, as called for in the RWBDCP, together with the presence of specialized support staff at the central level. Given the limited size of the HEU staff likely for the next few years, the field staff are going to be most effective as coordinators and motivators of the health related activities of the far more numerous general community extension workers. The specializations should include: training, production of educational materials and mass-media programs. A proposal for specialization at the central level exists in a previous personnel plan presented by Mr. Menouta to the Department of Establishments and Training in 1980. That plan also called for the establishment of a HEU staff of 17 health educator positions.

The question of what size the HEU should be is a difficult one. From a practical point of view, one cannot currently speak of a staff of 17 professionals given the lack of qualified personnel in Swaziland and the time and resources needed to train them. From a planning point of view, it is difficult to state the number of professionals required without knowing the relationship between the number of staff and the output they can produce. The productivity information on health education professionals will only become available if the HEU institutes a careful self-evaluation program with accurate measurement of time spent per activity, the number of targeted clients reached per activity, and some idea of the effectiveness in reaching behavior modification goals per activity. If such an evaluation program were to be instituted in the near future, by 1988, the time for the next Five-Year Plan, the HEU would be in a very good position to gauge the personnel needs of the organization. The evaluation team recommends that such an internal evaluation be designed by the staff of the HEU by the end of 1984. This would allow the new CHEO the opportunity to take part in the evaluation design and implementation.

The project contract calls for detailed HEU activity implementation plans to be drawn up annually. The specified National Health Education Plan is not required until the fourth year, 1984-1985. Although the national plan is specified in the contract, it should be noted that it is not a requirement by the Ministry. The official plan already exists for the 1983-1988 period.

These project requirements for plans are examples of the difficulties posed by the contract for the project Health Educator. Annual implementation plans for the HEU are the prerogative of the acting director, Mr. Menouta. At this point, Dr. Hoff should only be held responsible for the implementation plans for the RWBDCP health education activities. If in fact

the Health Educator had been the director of the HEU, the preparation of a national health education plan would have been a very understandable part of his responsibilities. In his actual role as advisor, preparation of a national plan could be seen as a presumptuous act. It is to be hoped that by the time the national plan is required by the contract that the climate of cooperation is such that the resulting plan will be seen to be an official expression of the objectives of the entire HEU and not a minority opinion of the RWBDCP Technical Advisor.

5.4.6 Institutional Development, Health Education Unit

The contract states that the project provides technical assistance to upgrade and institutionalize an existing Health Education Unit within the MOH. This unit is to function as a distinct administrative entity, serving the Ministry as a whole, other ministries and the private sector.

Official recognition of units and positions in the GOS occurs through publication in the Swaziland Government Establishment Register each year by the Directorate of Personnel Management, Office of the Prime Minister. Requests for the establishment of positions are made to the Department of Establishments and Training (DET). If the request meets their stringent criteria for demonstrated need, detailed job description and certified source of funding, the request is then sent to the Ministry of Economic Planning for approval.

The current Register, at the time of the evaluation, was that for the financial year 1983-1984. The Health Education Unit does not appear in the Register. Instead one finds the positions of assistant health engineer, three nurse-educators, one secretary and one driver appearing under the Rural Water Borne Disease Control Project. The creation of these posts under the RWBDCP was due to the wording on the requesting memorandum sent to the DET by the MOH in 1981.

Partial official recognition is given to a unit when it is issued a Responsibility Number. The unit did receive this number during financial year 1981-1982. However, it was withdrawn during 1982-1983, most probably because the unit did not appear in the Register. The number was restored for the 1983-1984 financial year but if the MOH does not move to fully establish the HEU this fiscal year, there is nothing to say that the Responsiblity Number will not again be taken away.

The GOS was required by the Project Agreement to establish the following posts in the HEU: a Director, two Nurse-Educators, four District Health Educators, a typist, and a driver. There is no rationalization given in the PP or the contract for why this particular number of positions was chosen, although it may have been determined by the number of candidates available for training at the time for the central level positions and the perceived need to get field personnel permanently situated in each of the four districts. At the time of the evaluation, the Director's position was not established, it was still listed as a Nurse-Educator position. The two other Nurse-Educator positions had been established as had the driver and typist positions. The four District Health Educator positions had not been established. According to the Project Paper, the Director's position should

have been established by October 1981; the four DHE positions by October 1983. A meeting was held at the DET on November 16, 1983, to discuss the status of the unestablished positions. Present were senior members of the DET, MOH, and the acting director of the HEU. It was evident that the MOH has to begin the establishment process for the HEU positions again. The MOH has significant decisions to make about the structure of the unit and the grades to be assigned to each established position. Some items were agreed upon at the meeting:

- the unit is to be established as the Health Education Unit and not the Health Education Centre;
- the unit's director is to have the title Chief Health Education Officer and not Director; and
- the Nurse-Educator position is to reclassified as a Health Educator position.

The MOH will redraft and submit the required Job Analysis and Evaluation Forms to the DET by the end of 1983. The MOH is concerned about the viability of a unit containing seven professionals because of the perceived lack of opportunities it presents for career advancement. Another concern is the establishment of the grade for a position based on the qualifications of the present incumbents rather than on the functional requirements of the job. Future holders of the position might not have the same professional background yet be qualified for the post but not the grade.

In summary, for this facet of institutional development, progress has been below that which should have occurred at this stage of the project. It is to be hoped that this situation will be resolved by December 31, 1983.

The academic training phase of institutionalization development was to consist of:

- training of the CHEO to the Master's Degree level in Health Education
- training of the HE's to the Diploma level in Health Education
- training of the Graphic Artist

The CHEO designate was not able to qualify for a Master's program, and is at present completing a Bachelor's program in Health Education at Southern Illinois University. She had previously received a Diploma in Health Education at the University of Ibadan, in Nigeria. That training was funded by the World Health Organization and not by the RWBDCP. Similarly, the two other Nurse-Educators were also trained in Nigeria with World Health Organization funding. The Graphic Artist is just about to complete a one-year program in Visual Communications at Indiana University and will return to the HEU in December 1983. This position did not need to be established as it already existed in the MOH before the contract started.

The change in training plans for the CHEO designate has affected that part of institutionalization characterized by the counterpart training phase. The CHEO designate left for training before the arrival of the present RWBDCP Health Educator, and it is expected that she will return after the project Health Educator has completed his existing contract. It is considered unlikely that any significant counterpart training took place

during the tenure of the first project Health Educator. The recommendation is made that, if major progress is made in the health education component of the RWBDCP and in the institutionalization of its programs into the Health Education Unit, the contract of the Project Health Educator be extended to provide at least six-months of overlap with the new HEU director.

An issue that requires clarification before the return of the CHEO is that of the line of authority from the CHEO upwards. Before the move of the health education group to the new building, it was accepted that the unit was officially under the PHU and thus under the authority of the Matron. Since the HEU has not officially been established, legally the unit is still presumably under the PHU's direction. The observation of the evaluation team is that, de facto, since the physical separation of the unit from the PHU in 1981, the direct line of authority has been from the Acting Director, Mr. Menouta, to the Director of Medical Services. The fact that the public health nurse plays an important role in the community as far as the health education programs are concerned does not mandate that the HEU remains part of the PHU. The PHN is only one of the persons whose activities in the health education programs will have to be coordinated by the health educators. The HEU will have more status as a separate unit with resulting beneficial effects on morale, esprit-de-corps and visibility on the national scene.

Due to the murky situation over who had the right to direct the Health Education Unit, it cannot be said that the activities of the RWBDCP have been fully integrated into those of the HEU. The morale of the Nurse-Educators is very low due to the lack of recognition for their training as Health Educators which should have resulted in merit increases in salary and the lack of establishment of their positions as Health Educators. Perceiving the friction that has sometimes occurred over the directorship, they have chosen to give their loyalty to Mr. Menouta with a resulting distrust of the motives of the AED Health Educator. This has sometimes been expressed as a reluctance to participate in activities clearly under Dr. Hoff's initiative or control. As a result of the clarification of Dr. Hoff's responsibilities by Mr. Menouta, it is fully expected that past difficulties will be forgotten and that the activities and contributions resulting from those activities will be fully integrated into those of the Health Education Unit. When full integration occurs, full institutionalization of RWBDCP activities and methodologies is expected to result.

5.4.7 Health Education Recommendations

- That the MOH establishes the positions of Chief Health Education Officer, Health Educator (2), and District Health Education Officer (4) by March 1984.

- That the advisory role of the AED Health Educator Technical Adviser be accepted and that the Acting Director of the HEU defines his responsibilities within the Unit.

- That the health education activities of the RWBDCP be fully integrated into the plans and programs of the HEU by December, 1983.

- That greater use be made of the KAP and other social-science outputs in the content, design and strategies of the health education component, i.e., beliefs, values about disease, community mobilization, women's groups.

- That different health education content and strategies be produced for traditional clients and early-adopter clients (as described in the KAP study report).

- That a protocol for the longitudinal evaluation of target behavior changes be completed by the end of February 1984. The longitudinal evaluation protocol should be completed by February, 1984.

- That the second KAP study be replaced by the longitudinal evaluation process.

- That Nurses and Doctors who interact with the traditional health practitioners should receive special training in cross-cultural relations in support of the MOH and RWBDCP policies of developing cooperative relationships with the traditional health sector.

- That the health education strategy plan be developed in more depth and detail and that it examine long-range planning and personnel requirements; the final version of the strategy is not due until 1985.

- That the project contract officially notes changes in circumstances on contract outputs by January 1984, i.e.,

  Output #3 (p. 7): replace "Forty-two health assistants" by "All Health Assistants".

  Output #11 (p. 8): replace "Three-hundred twelve community health workers" by "All community health workers". Remove bracketed list.

- That any efforts toward a school health program be first directed towards the evaluation of the existing published environmental health curriculum, for primary schools.

- That the AED Health Educator Technical Advisor encourage the increased participation of the HEU Health Educators in the Diarrheal Disease Control Campaign mass-media efforts.

- That the Assistant Health Development Officer, Mrs. L. Lankenau, be assigned by December, 1983 to closely monitor the progress of the health education component of the RWBDCP during the period December 1983 through April 1984.

- That early completion of the Health Education Technical Advisor's contract be considered in April, 1984 if major progress towards stated objectives has not been made by March 31, 1984.

- That in the event of major progress in the health education component and with evidence of the institutionalization of RWBDCP programs into the HEU and with the return of the Chief Health Education Officer designate by mid-1984, that the contract of the Health Education Technical Adviser be extended until the end of the project or February 1986, whichever comes sooner (a maximum extension of twelve months) to allow an eighteen-month overlap of advisorship.

CHAPTER 6
PURPOSE: PROGRESS TOWARD END-OF-PROJECT STATUS CONDITIONS

The purpose of this project is to expand the capacity of the Government of Swaziland to deliver effective preventive health services to combat diseases related to water and poor sanitation.

6.1 Validity of Assumptions in the Logical Framework for Achieving the End-of-Project Status (EOPS) Conditions

The EOPS conditions for this project, as listed in the contract, are:

1. The Environmental Sanitation (Health Inspectorate) and Health Education Units of the Ministry of Health will be staffed with trained personnel; the units will be equipped and functioning well.

2. The Rural Water Supply Board will be functioning to review all water construction works designed from the health perspective.

3. Eighty percent (80%) of the sanitation field workers of the MOH will be actively involved in the motivation, supervision, and training of rural people in the construction, maintenance, and proper utilization of improved pit-latrines.

4. Relevant health and water education messages will be reaching 60 percent of the rural population on a continuing basis. The Health Education Unit will be capable of determining community needs and translating this information into a practical effective health education program. The Unit will be capable of evaluating program contents as well as communication techniques to ensure continued relevance of the program to the needs of the people.

5. Health criteria will be incorporated into the design of water systems, dams, reservoirs, fishponds, irrigation schemes, and other major water works. The project-trained Swazi public health engineer will be serving as an advisor to the Rural Water Supply Board to ensure that health criteria developed during the project are applied to the design and construction of water-related activities.

6. Data generated by the schistosomiasis survey will be used in setting priorities for the GOS health education, sanitation, and water supply programs.

The important assumptions for these EOPS conditions, listed in the Project Paper, are:

(1) that there are no cultural factors beyond the scope of the project that will inhibit the of improvement of (water and sanitation related behavior;

(2) that the water supply program will continue at at least the current rate of implementation;

(3) that the GOS will continue the Rural Health Motivator and Health Assistant programs;

(4) that the KAP study results will be useful in determining appropriate health education content;

(5) that the GOS will establish the required posts;

(6) that trainees will return to work in positions for which trained;

(7) that health education and sanitation activities are a high priority of the MOH;

(8) that qualified candidates will be available for engineering training; and

(9) that the GOS will use the results of the schistosomiasis survey to plan future control programs.

All of these assumptions are not still valid for this project.

Assumption (2), while valid now, has the potential of becoming invalid in the near future. The ability of the Rural Water Supply Board to construct water supplies means nothing if there is a 12-18 month cessation in activities due to the loss of funding from foreign donors. The immediate effect of a loss of funding by the RWSB would most probably be cancellation of the public health engineering position. It is unlikely that another ministry or agency would be willing to establish the position within the lifetime of the RWBDCP.

The immediate impact of the cessation of construction of new water supplies on the health education and sanitation components is unlikely to be catastrophic. The latent demand for latrines is most probably strong enough to keep the sanitation component busy until the end of the project, and there are most probably sufficient communities already with water in need of health education input to keep that component busy till the end of the project. Evidence from other countries and the results of the Hhohho District water-supply study suggest that there is a positive relationship between the introduction of water-supply and the adoption of hygienic and sanitary behavior. If the construction of new rural water supplies was to be terminated for several years, one would expect to see a diminution in the effectiveness of the sanitation and health education programs in the rural areas.

Assumption (5), about the establishment of posts, is still questionable at the time of the evaluation; 6 to 10 positions have not been officially established. This lack of establishment has certainly hampered the progress of the health education component. If the HEU positions are not in fact established in 1984, the HEU will continue to function at some level but the viability of a national health education program of significance would be

unlikely. As far as the RWBDCP is concerned, without establishment of the unit and the requested positions, it is very unlikely that the RWBDCP programs would become institutionalized. The health education activities could return to the direct supervision of the Public Health Unit and an uncertain fate. In the past when placed in the PHU it was difficult for the health education activities to maintain continuity and momentum because personnel would be taken out of health education and returned to nursing activities when the PHU directors thought it to be necessary. Failure to establish the unit would be very detrimental to the progress of the project and would be grounds for considering its termination.

Assumption (8), on the availability of qualified engineering candidates for the public health engineering position, will be invalid if the present candidate resigns. There are no alternative candidates who could be prepared for the position within the time limits of the project, inasmuch as on-the-job training and academic training would have to be completed by mid-1985. However, it would still be feasible for the RWSB to choose another candidate from the 1984 group of returning engineers and complete training by 1986 or 1987. The RWSB also has the option of training one of its engineers already on board. The RWSB Chief Engineer does appear to be committed to the establishment of this position, but if the position were not there by the time his contract is up, it is quite likely that the position would be lost. The impact of not having a public health engineer in the GOS will be the continued design of health-risk-producing development project but it is not clear that that threat is of sufficiently grave concern to the GOS for it to push for the establishment of the public health engineering position.

One important assumption that was implicitly made in the project paper's Logical Framework, though not formally stated, was that the project's Health Education Technical Adviser was going to assume the directorship of the Health Education Unit with concomitant control over its resources and the ability to institute policy on planning, implementation, evaluation, national strategy, and Unit objectives. The Unit's director did not leave as expected by 1981, and is expected to continue in that role until December, 1985, unless the return of the Chief Health Education Officer designate precedes that date. Thus the basic assumption is invalid which has a significant impact on the quality of institutionalization and institutional capabilities that may result by the end of the project. The Health Educator is in a purely advisory role and in having to negotiate for the use of the Unit's resources to complete contracted activities. This change in major assumptions has to be taken into account when evaluating the progress of the project.

The evaluation team is willing to accept the continuing feasibility of the EOPS conditions.

6.2 Project Extensions or Reductions

The Scope-of-Work called for the evaluation team to review the progress made by contractor personnel and to make recommendations, as appropriate, for extensions or reductions in the periods of technical assistance required to achieve project objectives.

The recommendations are summarized here by position. The full support for these recommendations are to be found in the relevant program component reports in Chapter 5, PROJECT OUTPUTS.

a) Environmental Sanitarian - neither extension nor reduction in service recommended; contract to end 6/84.

b) Epidemiologist - extension of one year recommended for further institutionalization of the Bilharzia Control Unit and to institutionalize the diarrheal disease survey.

c) Public Health Engineer - extension recommended only if counterpart goes for out-of-country academic training and there is an opportunity for a period of on-the-job training after the counterpart's return until the expected project completion date of February 28, 1986. If it is not possible to fulfill the counterpart-training requirement either academic or on-the-job, a reduction of service may be warranted.

d) Health Educator - extension until February 28, 1986 is recommended if the Chief Health Education Officer returns by mid-1985 and assumes the directorship of the Health Education Unit AND all the contracted HEU positions have been established and filled AND institutionalization of water and sanitation related programs have taken place AND contract requirements for health education outputs have been fully met according to contract schedule. Reduction in service may be warranted if agreed upon targets are not reached by March 31, 1984.

In all positions, the primary argument for extension would be to increase the degree of institutionalization achieved by the end of project.

CHAPTER 7

PROJECT GOALS AND BENEFICIARIES

7.1 Project Goals

The ultimate goal of this project is to improve health conditions in Swaziland, specifically in the areas of mortality and morbidity of water- and sanitation-related diseases; the immediate goal of this project is to improve the sanitation, water-use, and water-protection habits of the rural population. While supporting activities such as latrine construction, public health engineering, schistosomiasis surveillance, and the promotion of oral rehydration therapy are included in the project, the major emphasis is the adoption by individuals of health-promoting behavior. The supporting services are seen as necessary reinforcements to the health education objectives.

The project has not progressed sufficiently for the evaluation team to observe or predict the impacts it will have on the health status of the target population or on their adoption of health-promoting behavior. The preliminary evaluation of radio programs on diarrheal disease prevention and control that have been broadcast for close to a year indicates that these well planned and executed messages are reaching a high percentage of the target population. Whether this reception of the messages will translate into the desired behavior changes will have to be seen after future evaluation results have been collected.

A major goal of this project is institutionalization of skills and programs, specifically:

- development of planning, implementation, and evaluation skills for health education programs
- development of community mobilization skills among primary health care workers and other community development agents
- development of public health engineering skills and institutionalization of the profession within the GOS
- development of management and other professional skills at the Bilharzia Control Unit and the institutionalization of surveillance programs
- development of the technical and community mobilization skills of the Health Inspectorate with respect to the delivery of sanitation and water supply facilities

The evaluation team feels that successful institutionalization is occurring and will continue to occur albeit in ways not seen by the project planners.

In the area of sanitation, the Sanitarian Technical Adviser has been successful in transmitting technological information and has created a demand for continual technological updating and expansion of knowledge. Through his managerial skills, he has demonstrated the values of those skills and the institution now is demanding the establishment of a position to continue that input. The evaluation team feels that the technical

assistance in this project component will have a lasting effect after the technical assistance has been withdrawn.

In the area of public health engineering, at first sight, it appears as if institutionalization is threatened: the postion has not been established at the MOH as planned and there is some doubt as to the training of the engineer designate. However, it is obvious that the Public Health Engineer Technical Advisor, through his practice of professional expertise, has created a demand for those skills to the extent that another ministry, the MOW, is willing to sacrifice an existing position in order to convert it into the public health engineer position. It is thus very likely that the position will be established in a appreciative milieu, and that the demand for services will continue to grow within other units of the GOS. Even if the Technical Advisor were to be withdrawn today, one senses that the position would still be established. With the continued presence of the Adviser for at least one more year, the team feels that significant further institutionalization will occur.

In the area of epidemiology, significant progress has been made in developing the skills of the relevant institution and requests made to the team for the extended stay of the Epidemiologist Technical Advisor by the institution's senior personnel indicate that the developments will remain after the close of the project.

The evaluation team made the following observation about the process of institutionalization with respect to this project. Institutionalization occurs as a result of the GOS clients seeing the value of the activities and skills of the project's Technical Advisors. GOS personnel, by observing, evaluating and appreciating these inputs, express the need for continuing these inputs and establishing them within the structure of the GOS. The project has demonstrated this in the cases of the social scientist, sanitarian, epidemiologist and public health engineering inputs. It is in the light of this observation that the evaluation team recommends that the Health Education Technical Advisor be permitted the time remaining in his contract to demonstrate his skills in the field with the full expectation that as a result of his efforts successful institutionalization will follow in the health education component.

7.2 Project Beneficiaries

The direct beneficiaries of the project will be mainly the rural residents who adopt changes om health-related behavior. Women are the primary target since they are responsible for child care and education, most water- and food-related tasks, household maintenance, and the health of the family. If simple changes in household practices are adopted, together with the proper use of sanitation facilities, one can expect that these rural residents will benefit from a reduction in child mortality and diarrheal and parasitic-based morbidity.

Other direct beneficiaries are those receiving academic or in-service training. Extension workers receiving training in communications and community mobilization skills will use those skills to help meet the needs of communities, which then become the secondary beneficiaries.

The Government stands to benefit from the development of existing programs and institutions and from the improvements in the skills of officials at all levels of government. The Government also benefits from the introduction of such resources as the Health Education Unit building, physical improvements to the Bilharzia Control Unit, vehicles, and other material inputs.

7.3 Unplanned Effects

No unplanned effects of significance have been noted.

CHAPTER 8

CONCLUSIONS

8.1 General Findings

- Technical assistance has been of generally good quality with superior back up support from the home office in Washington, D.C.

- Progress is being made in institutionalization albeit in a manner not in strict accordance with the contract. Institutionalization is occurring as a result of the Technical Advisors demonstrating the value of their skills and input to GOS clients working with them. The component that has made the least progress is the health education component due to the problems over control of the Health Education Unit and an ensuing estrangement of the project from the already ongoing Unit activities. The evaluation team expects that full integration will occur by the end of the technical assistance input.

- Scarcity of qualified personnel is a major problem for the Government; capable people are quickly placed in senior administrative positions and barely-trained people are given line responsibilities more fit for individuals with considerable professional experience. This creates problems for Technical Advisors who are required to train counterparts to the extent that, on departure of the TA, the counterpart has the experience and ability to fully replace the TA. The project addresses the scarcity problem through its financing of academic and in-service training.

- Progress is being made towards the attainment of the End-of-Project-Status conditions specified in the project contract. Progress has not been equal in all project components. Placing the project components by order of achievement thus far. Following are:

    1. Social science
    2. Epidemiology
    3. Sanitation
    4. Public health engineering
    5. Health education

- Despite the changes in conditions that occurred between the signing of the contract and the actual implementation of field activities, the wording in the contract has never been revised in any manner. All existing amendments to the contract deal solely with changes in project funding. Thus the scope-of-work document delivered to the evaluation team requested the examination of objectives that had been acknowledged by the project team and USAID Mission to be inappropriate since the start of the project in 1981. The evaluation team found on file at the USAID Mission

copies of internal agency memoranda, dated October 27, 1981, dealing with the deficiencies in the AED-USAID contract and recommending the changes that needed to be made in the contract wording. One of the memorandum authors notes that the recommendations had been pencilled in on a personal copy of the contract. A copy of the pencilled-in version was on file but since the uncorrected outputs and workplan activities were still mentioned on the evaluation team's OTD document, it appears that the recommended corrections were never officially responded to or acted upon.

Further evidence of poor contract preparation is the fact that the contractor, AED, has been justified in requesting substantial increases in the project budget to cover the cost of activities specified clearly in the contract yet not contained within the contract's original AED disbursement budget, i.e., latrine construction, both KAP studies, and mass-media campaigns. Given the number of contracts that USAID has prepared, it is surprising to the evaluation team that such major errors should have occurred.

- The evaluation team found that all activities of the Rural Water Borne Disease Control Project fall within the scope of work of the contract and are in harmony with the intended purpose of the project.

8.2 Key Concerns

- Establishment of the Health Education Unit positions, especially those of District Health Educators. With the limited manpower available now, it is hard to see how the Unit can have the impact on public health in Swaziland that the Ministry of Health calls for in the latest national health policy document. Limited personnel and low morale pose problems for the implementation of the RWBDCP health education activities, as well as all other health education inputs.

- The disagreement over the directorship of the HEU was unfortunate and has left a legacy of mistrust. Dr. Hoff and Mr. Menouta appear to have a good personal and working relationship and it is hoped that past events can be laid to rest and that a relaxed and fully cooperative environment continues to emerge as the project activities are integrated into the Unit's programs and Dr. Hoff's inputs are appreciated without exception.

- The training for the public health engineering post is a concern. If the present candidate were to leave the Rural Water Supply Board or decline the post in favor of some other engineering position, it is very unlikely that a new candidate could be found whose schedule for training would fit in with that of the project.

- Continuation of the project. It was evident during the project evaluation that there was USAID Mission concern for the viability

and ultimate achievements of the project given the rather substantial constraints it has faced, especially in the area of health education, acknowledged to be the key component of the project. It should be emphasized, however, that this project represents a major effort by the Government of Swaziland to meet its declared major priorities for the development of the health sector. The National Health Policy states (page 13) that among its major priorities are:

- to develop health education programs focusing on the major health problems
- to promote the development of clean water supplies and basic sanitation
- to develop mechanisms for grass-roots participation in the planning and implementation of health programs.

The evaluation team's concern is that the potential of this project to help achieve the Government's objectives may be misjudged or underestimated at this time. The team feels that in the light of certain changes that are expected to take place over the next six-months, it would be unfortunate to consider the early termination of this project now.

CHAPTER 9

KEY RECOMMENDATIONS

9.1 Public Health Engineering Component

9.1.1 Recommendations for AED

- o Select criteria for choosing major water resource development projects for public health engineering review . and based on the evaluation and impact analyses required of donors for proposed projects, begin review of all major projects by February 1984.

9.1.2 Recommendations for AED and AID

- o Delay decision about graduate level training until the present candidate, M. S. Zwane, has had at least one year of on-the-job training and has proven himself sufficiently qualified and motivated. The project should be prepared not to implement this training aspect of the project if the present candidate resigns or is not considered to be appropriate. If there is no suitable candidate for graduate training by June 1984 do not implement training.

- o Depending upon the progress of the public health engineer counterpart situation, delay any decision regarding extension or possible early completion of Dr. Hoadley's contract. If the training aspect proceeds successfully, then extending Dr. Hoadley's contract until Mr. Zwane's return may be justified. If not, possible early completion may be warranted.

9.2 Epidemiology Component

9.2.1 Schistosomiasis

Recommendations for AID and AED

- o Extend stay of Technical Advisor for one year to September 1985. This decision to be made by January 1984.

Recommendations for AED

- o Send Ms. Nxumalo, the BCU Director, for management training to the Swaziland Institute of Management and Public Administration in early 1984.

- o Surveillance for all the schools in the northern low-veld for both S. haematobium infection and S. mansoni infection, with appropriate treatment follow-up, to be completed by March 1984.

- Continue schistosomiasis surveillance in Swaziland using primary and secondary schools as a basis for sampling. Use these data to analyze trends in the prevalence of infection.

- Dr. Chaine should promote greater exchanges among BCU, Public Health Engineering, and the Health Education components of the RWBDCP.

- Complete report on National Survey of the other intestinal parasite infections by February 1984.

Recommendations for AID

- USAID should provide funds for the purchase of metrifonate and praziquantel, reagent strips for detecting blood and protein in the urine, additional membrane filter equipment, stool specimen processing equipment, laboratory glassware and reagents.

Recommendation for the MOH

- Improvements in data management and analysis are badly needed. Both hardware and software computing is required. (An HP41CV with appropriate attachments would be a low cost initial alternative). A small microcomputer with interface capability with the MOH computer is very desirable. The MOH should supply the computer as early in 1984 as possible.

9.2.2 Diarrheal Disease

Recommendations for the MOH

- Develop the diarrheal surveillance study as an integral epidemiological component of the Public Health Unit or Public Health Laboratory by the MOH.

- For data processing hardware and software support should be planned for now. Programming is urgently needed and should be provided by the MOH. During the pilot phase, data analysis needs will require a responsive system capable of providing preliminary tabulations necessary for planning and evaluation of the study design. Potentially, this can be provided by MOH Statistics Unit. However, the data generated by field activities will soon surpass this capability.

Recommendations for AED

- Study size for the diarrheal disease survey (the number of homesteads that must be included for weekly surveillance) must be assessed by January 1984 by Dr. Chaine. This is necessary for purposes of study design and to assure that there are sufficient data for a) estimating rates, b) making comparisons between different rural districts, and c) identifying diarrheal disease and mortality risk factors.

9.3 Sanitation Component

9.3.1 Recommendations for the MOH

- The recommendations of the Phillips report should be evaluated and, where appropriate, action taken by the MOH on these recommendations.

9.3.2 Recommendations for AID

- Delete from the contract the "demonstration pit-latrine" and "sanitation committees" concept and objectives by January 1984, as they are no longer appropriate to the project.

9.3.3. Recommendations for AED

- As a follow-up to the pit-latrine construction activity and to provide a method of evaluating its success, one-year follow-up homestead visits by Health Assistants are recommended. The pit latrine evaluation protocol should be completed by January, 1984 by Mr. Lawrence.

- There is the potential for a public health crisis in the peri-urban area. Currently, people living in these areas may not have access to potable water and, for the most part, do not have latrines. Accordingly, development of a pilot project, private sector, pit-latrine construction strategy, coordinated through the Town Councils' Health Inspectorates and the Water and Sewerage Board is recommended to be completed by March, 1984 by Mr. Lawrence.

9.4 Health Education Component

9.4.1 Recommendations for AID and AED

- That the advisory role of the AED Health Educator Technical Advisor be accepted and that the Acting Director of the HEU define his responsibilities within the Unit.

9.4.2 Recommendations for the MOH

- That the MOH establish the positions of Chief Health Education Officer, Health Educator (2), and District Health Education Officer (4) by March 1984.

- That the health education activities of the RWBDCP be fully integrated into the plans and programs of the HEU by December 1983.

9.4.3 Recommendations for AED

- That a protocol for the longitudinal evaluation of target behavior changes be completed by the end of February 1984 by Dr. Hoff.

- That the second KAP study be replaced by the longitudinal evaluation process. The decision should be made by AED, Washington, D.C. by February 1984.

- If major progress is made in the health education component and if there is evidence of the institutionalization of RWBDCP programs in the HEU, the contract of the Health Education Technical Advisor should be extended by AED until the end of the project or February 1986 (whichever comes sooner with a maximum extension of one year). With the return of the Chief Health Education Officer-designate by mid-1985, this would allow at least a six-month overlap of advisorship.

9.4.4 Recommendations for AID

- That the USAID project contract officially note changes in circumstances on contract outputs by January 1984 i.e.,

  Output #3 (p. 7): replace "Forty-two health assistants" by "All Health Assistants."

  Output #11 (p. 8): replace "Three-hundred twelve community health workers" by "All community health workers." Remove bracketed list.

- That the Assistant Health Development Officer, Mrs. L. Lankenau, be assigned by USAID by December 1983 to closely monitor the progress of the health education component of the RWBDCP during the period December 1983 through April 1984.

9.4.5 Recommendations for the MOH

- That early completion of the Health Education Technical Advisor's contract be considered by the MOH and USAID in April 1984 if major progress towards stated objectives has not been made by March 31, 1984.

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APPENDIX A

CONTACTS MADE DURING EVALUATION MISSION

Ministry of Health

Mr. T. M. J. Zwane, Principal Secretary
Mr. H. B. Malaza, Under Secretary
Dr. Z. M. Dlamini, Director, Health Services
Dr. M. Owen, Deputy Director, Health Services
Mr. N. Dlamini, Assistant Administrator
Ms. K. Connelly, Statistics Unit
Ms. D. Nxumalo, Chief Planning Officer
Mrs. T. Mkoko, Personnel Officer

Public Health Unit, MOH

Matron E. N. Ntiwane
Mrs. G. Matsebula, Diarrheal Disease Control Program Coordinator
Mrs. E. Mndzebele, Rural Health Motivator Training

Health Inspectorate, MOH

Mr. L. Mtetwa, Senior Health Inspector
Mr. W. Nkambule, Health Assistant, Siphocosin
Ms. B. Nxumalo, Health Inspector, Bilharzia Laboratory, Manzini
Mr. W. Ginindza, Senior Health Assistant, Bilharzia Control Unit, Manzini

Health Education Unit, MOH

Mr. L. Menouta, WHO Health Education Advisor
Mrs. M. Mndziniso, Health Educator
Mrs. P. Similane, Health Educator
Mr. D. Aryeequaye, Graphic Artist

Ministry of Works, Powers and Communications

Mr. T. Brook, Director, Water Resources Branch
Mr. G. Evans, Senior Engineer, RWSB
Mr. N. Ntezinde, Planning and Construction Engineer, RWSB
Mr. W. Lawrence, Director, Water Quality Lab, Matsapha, RWSB
Mr. W. Campbell, Training Officer, RWSB
Mr. S. Zwane, Public Health Engineer, RWSB

Ministry of Agriculture

Mr. N. Mamba, Director, Community Development Office
Mr. P. Lukhele, Director, Regional Development Administration
Mr. J. Vilikati, Director, Land Use Planning

Department of Establishments and Training

Mr. A. M. Mbingo, Assistant Director
Mr. C. Dlamini, Health Liaison Officer
Mr. E. M. Hlophe, Senior Management Services Officer

United States Agency for International Development/Swaziland

Mr. R. Huesmann, Mission Director, Mbabane
Mr. J. Philpott, Deputy Director, Mbabane
Dr. C. DeBose, Regional Health Development Officer, Mbabane
Mrs. L. Lankenau, International Development Intern, Mbabane
Mr. P. Daly, Agriculture Development Officer, Mbabane

Academy for Educational Development

Dr. W. Hoadley, Technical Advisor/Chief-of-Party, Mbabane
Dr. W. Hoff, Technical Advisor, Mbabane
Dr. J. P. Chaine, Technical Advisor, Manzini
Dr. E. Green, Technical Advisor, Mbabane/Washington, D.C.
Mr. W. Lawrence, Technical Advisor, Mbabane
Dr. A. Kulakow, Project Manager, Washington, D.C.
Mr. M. Rasmuson, Technical Advisor, The Gambia
Ms. A. Joof, Technical Advisor, The Gambia
Mrs. E. Bisson, Administrative Assistant, Mbabane

Water and Sanitation for Health Project, Washington, D.C.

Mr. C. Hafner, Task Manager

U.S. Agency for International Development, Washington, D.C.

Mr. A. Cole, Africa Bureau
Mr. L. Jackson, Africa Bureau
Mr. S. Pulaski, Africa Bureau
Mr. V. Wehman, Science and Technology Bureau
Mr. C. Witten, Science and Technology Bureau

APPENDIX B

EXECUTIVE SUMMARY QUESTIONS FOR AID/AFR/DP
SWAZILAND RURAL WATER BORNE DISEASE CONTROL PROJECT (645-0087)

I. What constraints does this project attempt to overcome?

This project, which supports existing rural water supply efforts in Swaziland, attempts to enhance control of water borne diseases and institutionalizes water borne disease control capabilities.

II. What technology does this project promote to relieve this constraint?

This project promotes water-and-sanitation health education, low-cost pit-latrine construction, public health engineering, epidemiology and sociology-survey technologies.

III. What technology does this project attempt to replace?

This project does not attempt to replace any existing technology, rather it is designed to support and enhance existing government programs and to add new capabilities to Government of Swaziland agencies.

IV. Why do project planners believe that intended beneficiaries will adopt the proposed technology?

Water borne diseases are a major cause of morbidity and mortality in the rural population, particularly in infants. This was particularly true during the 1981-1982 cholera outbreak which brought a strong focus onto water borne disease problems. Currently there is a strong demand by the rural population for water supplies and pit-latrines, indeed neither the project nor the government can begin to meet this demand.

V. What characteristics do intended beneficiaries exhibit that have relevance to their adopting the proposed technology?

Because of the size of the country and the transport systems available, there is relatively good access to urban areas and, therefore, exposure to modern conveniences.

VI. What adoption rate has this project or previous projects achieved in transferring the proposed technology?

As indicated above, the project cannot meet the current demand for water supplies (not offered by the project) and pit latrines.

VII. Will the project set in motion forces that will induce further exploration of the constraints and improvements to the technology package proposed to overcome it?

As part of the institutionalization process, USAID has or will have provided training to a health educator, a graphic artist for health education, and a public health engineer. In addition, all Technical Advisors will have developed counterpart relationships. The combination of both formal academic and on-the-job training should enable the trained individuals to continue the programs established and/or enhanced during the life of the project.

VIII. Do private input supplies have an incentive to examine the constraint addressed by the project and come up with solutions?

This project is designed to enhance Ministry of Health functions, primarily through institutionalization, therefore, the role of the private sector is limited. The one area for private sector involvement would be in the construction and marketing of pit latrine slabs. A recommendation of the evaluation is that the Health Inspectorate attempt to promote such involvement to meet the growing needs of the peri-urban populations.

IX. What delivery system does the project employ to transfer the new technology to intended beneficiaries?

The delivery systems used include health education via community groups, home visits and radio programs; improved sanitation via home visits by community extension workers; schistosomiasis and water borne disease control via epidemiological studies and public health engineering input into water resource development projects.

APPENDIX C

REVIEW OF REPORT ON NATIONAL SURVEY OF SCHISTOSOMIASIS

Prepared and submitted by the Bilharzia Control Unit and
Dr. J. D. Chaine, Technical Advisor

November, 1983

Introduction

This review should be interpreted in the overall context as evidence to demonstrate the institutionalized capacity of the BCU to perform as a national parasitology laboratory and service. The overall goal of this project was to strengthen and establish improvements in the ability of the BCU to provide:

- Identification of helminthic and protozoan infections in stool and urine specimens
- Maintain routine surveillance of schistosomiasis infection in rural Swaziland
- Instigate schistosomiasis treatment and control programs based on surveillance results
- Survey of vector snails
- Establish the boundaries of schistosomiasis transmissions in Swaziland
- Examine the relationship between water supply, sanitation and schistosomiasis
- Provide guidance of MOH planning for schistosomiasis control

The National Survey of Schistosomiasis was designed within the framework of the capabilities of the BCU to be able to continue programs and activities after the TA and RWBDCP inputs were terminated.

NSS Design

The survey design was developed from the methods the unit had been using for routine surveillance of schistosomiasis in the past, i.e., examination of school children attending rural primary and secondary schools. In this study the following components were added:

- A random selection of rural schools using appropriate maps
- Examination of workers at the Big Bend irrigation camps
- Lomati Basin school and community survey
- Engculwini homestead study

Comment: This was a suitable design providing comparable countrywide estimates of schistosomiasis prevalence. Moreover, this design was within the reach of the BCU given the approved GOS manpower allotment in the unit, RWBDCP goals, and reproducibility by the BCU personnel.

Parasitology Methods

Schistosome eggs and other intestinal parasitic cysts and ova in stools were quantified using a modified Richie technique. Schistosome eggs in urine specimens were identified by sedimentation. Snails and carcariae were sampled and identified by standard techniques.

Comment: Identification of schistosome eggs in the urine should, and can, be upgraded to quantify the number of eggs per 10 ml/urine by the membrane filter. At the time of project start-up, the unit was not capable of obtaining, processing and examining stool specimens. This has been a significant contribution as the identification of S. mansoni is not possible otherwise.

Results

3711 individuals were examined for S. haematobium, S. mansoni and intestinal parasitic infection. 30.7% of the urine specimens were positive for S. haematobium and 26.7% were positive for S. mansoni. Prevalence and intensity of infection was found to be distributed from high to low on a north to south, middle- to low-veld basis. Transmission of schistosomiasis has not been found to occur in the high-veld.

Interestingly, water supply and sanitation were negatively associated with S. haematobium specially among young children. A similar evaluation with S. mansoni will require additional data.

Irrigation correlates S. mansoni prevalence was about equal among the adults from the endemic Lomati Basin and the male adult workers from the previously irrigated studied C.D.C. Estates.

Results from school studies inside and outside the irrigated areas of the C.D.C. Estates showed a higher prevalence of S. haematobium among children from non-irrigated areas as compared to children from the irrigated C.D.C. area. However, the distribution of S. mansoni infection was reversed. S. haematobium was higher among C.D.C. field workers than adults living in the Lomati Basin.

B. africanus, the vector for S. haematobium was not found at Big Bend in the south. Therefore, transmission of S. haematobium is not possible. Children from nearby non-irrigated areas had 40 to 60% less S. mansoni than children from the Big Bend irrigated Estates.

The opportunity for control at the large estates is good, however, and the management of these concerns have shown clear interest in supporting control measures and designing irrigation systems that do not promote transmission.

Conclusion: The irrigated Estates may increase the risk of schistosomiasis

particularly S. mansoni. Control efforts are reasonable and cooperation between MOH and these concerns has been and continues to be productive.

Irrigation schemes are likely to increase by as much as 400% in the low-veld. Other water resource schemes are being planned or are under construction. Trends or incidence of schistosomiasis were not measured by this study. This is not a criticism, but points to the continued need for surveillance by the unit.

Educational input at the schools about schistosomiasis is presently being taught.

APPENDIX D

LETTER FROM PRINCIPAL SECRETARY, MINISTRY OF HEALTH CONCERNING SUPPORT FOR DIARRHEAL DISEASE SURVEY

SWAZILAND GOVERNMENT

Ministry of Health
P.O. Box 5
MBABANE

Our Ref: MH/1154

17th November, 1983.

The Director
Attention Dr. C. DeBose
USAID
P.O. Box 750
MBABANE

Dear Sir,

RURAL WATER BORNE DISEASE PREVENTION PROJECT

Over the duration of the above project there has been an increasing emphasis on Diarrhoeal Disease, as the Schistosomiasis Surveys have been completed.

This change of emphasis is in keeping with present Ministry of Health Policy and the Ministry is keen to ensure that the current emphasis is maintained and strengthened.

The Ministry's understanding is that the Health Advisory Panel Swaziland Rural Water Borne Disease Control Project reflect the previous emphasis on schistosomiasis. The Ministry requests that, in order to make the greatest use of the resources of this project and its emphasis on Dia. oeal Illness, this panel should reflect the current concerns both of the Ministry and the Project. This the Ministry considers could strengthen the resources of the project.

The Ministry hopes that such a request is considered favourably.

Yours sincerely

T.N.J. Zwane
Principal Secretary

NO. 638
RHDO

GPC

APPENDIX E

DIARRHEA SURVEILLANCE PROTOCOL

It is proposed that a study of 180 low-veld homesteads be undertaken to gather information about diarrheal diseases in the low-veld. The homesteads will be visited weekly by Rural Health Motivators who will log any diarrhea episodes among family members. Young babies will be weighed monthly and growth curves maintained. Information collected will then be used to supplement clinic based data to determine seasonal variations and provide baseline data necessary for a rational policy formulation for diarrheal diseases prevention programs.

Objective

The objective of the proposed program of surveillance of diarrheal diseases in the low-veld is to establish the nature and extent of diarrheal diseases in the low-veld of Swaziland and to define those contributory factors related to diarrheal diseases. The surveillance activities, focused at the homestead level, will thereby supplement the current clinic-based records. The study will provide baseline data on the incidence of diarrheal diseases, establish current infant mortality rates and the impact of diarrhea on this infant mortality rate. It will determine the seasonal variation in diarrheal diseases and establish the high risk age group of the low-veld.

The data collected will provide the basis for rational policy formulation, health planning and design of diarrhea prevention and control programs. The baseline data will allow evaluation of future intervention and prevention programs mounted in the area to assess which are most effective, thereby allowing optimum allocation of resources available.

The study will develop and evaluate methods for conducting epidemiological activities using rural health motivators.

Scope

The study will establish:

a. The type of diarrheal diseases prevalent in the low-veld:

   (1) Acute Diarrhea: rapidly dehydrating and self-limiting

   (2) Chronic Diarrhea: long-term, smoldering diarrhea with serious nutritional consequences and its impact on the population

b. The type of treatment, either traditional or modern, used for episodes of diarrhea as related by the mother in weekly interviews.

c. The age and seasonal distribution of the incidence of diarrhea.

d. The infant mortality rate and its relationship to diarrheal diseases.

e. The relationship of breastfeeding and incidence of diarrhea.

f. The relationship of diarrheal episodes and the nutritional status of the child.

Methods

Surveillance Area and Personnel: The Rural Health Motivators (RHM) working from the Sithobela, Siphofaneni, Luboli and Ndzevane Clinics will be the focal point for the surveillance activities. Eighteen RHMs deemed most intelligent, conscientious and motivated by supervisory personnel, will be selected and asked to participate in the diarrheal surveillance program.

Homestead Selection: Each RHM is currently responsible for visiting approximately forty homesteads per month. From these forty, the ten homesteads with the youngest babies will be selected for weekly surveillance. The RHMs will visit 18 x 10 homesteads each week for one year (52 weeks).

Report Format, Record-Keeping and Computer Coding: The epidemiologist in collaboration with the Public Health nurses in charge of RHM program, the WHO epidemiologist, the MOH statistician, the MOH Deputy Director of Medical Services and members of the Rural Water-Borne Disease Control Project, will develop the census forms and weekly surveillance format to be used by the RHMs. All data collected will be coded and entered into the MOH computer with the assistance of the MOH statistician and computer programmer. Each RHM will be provided with a hardcover notebook containing the consolidated census information where-in weekly notes for each homestead will be entered. The RHM will also be required to fill out the weekly surveillance questionnaire and return it to the supervisor.

Training: All RHM training will be conducted in small groups of six to eight RHMs by the Public Health nurses, the Health Inspector assigned to the Bilharzia Unit and the Epidemiologist. The language of instruction will be SiSwati. The training will cover the purpose of the study, the dangers of diarrhea in infants, and the proper use of oral rehydration salts. The proper use of the standardized questionnaire and census forms will be continually emphasized. After the initial training, further sessions will be held, depending on the problems and needs which are identified during the course of the study.

Census: After the initial training sessions, the RHMs will conduct a complete census of the selected homesteads, giving the name, sex and date of birth of each resident. Using the standardized form, additional information will be obtained on the sources and treatment of drinking water, the clinic

and hospital frequented by the family, and the methods for disposing of human waste used by homestead residents. The availability of salt, sugar and functioning radios in the homesteads will be established.

Weekly Surveillance: The weekly visits of the RHMs will be primarily concerned with the identification and documentation of each episode of diarrhea. While emphasis will be on infants, all members of the homestead will be followed. The weekly interviews will also update the census and record births and deaths.

All babies under two years will be weighed once per month, using a portable hanging spring scale. The results will be plotted on the MOH Blue Growth Curve, a copy of which will be left with the mother and a second copy which will be kept in the RHM's notebook.

Supervision: The supervision of the RHMs has always presented problems. The RHMs involved in the surveillance will be visited each week by either the epidemiologist, health inspector or Public Health nurse at a pre-determined time and place.

Whenever possible, the supervisor will accompany the RHM on the homestead visits. Close daily supervision will not be possible and the success of the survey will depend on maintaining the interest, commitment and motivation of the RHM.

It is expected that the Ministry of Health will provide transport (vehicle and petrol) for the supervisors.

Material Budget:	Baby scales 18 x E50	= E	900
	RHM notebooks 20 x E3	=	60
	Bus transport for RHM (E50 per meeting x 5)	=	250
	Paper, stencils, pens, etc.	=	100
	Miscellaneous	=	100
Total:			E1,410